

Containing Plans of This House; also a Colored Supplement with Plans and Details

Building Age



OCTOBER, 1917

PRICE 20 CENTS



*Residence at Greenwich, Conn.,
Cross & Cross, Architects, New York*

SPECIAL MOTTLED HUDSON SHINGLES

laid according to the Thatched Method
were used on the roof of this building.

Hudson Shingles do not catch fire from
sparks, and are approved by the National
Board of Fire Underwriters.

*Write us for samples and book
entitled "Shingling and Roofing."*

Asphalt Ready Roofing Co.



DEPT. 52

9 Church St., New York



*Residence of Mrs. T. R. Baker, Clifton
Park, Lakewood, O.
G. B. Bohm, Architect*

Guardian of Your Buildings

When your building is finished,
when from roof to basement it *just*
suits you—call in the Bay Stater
and let him keep it so.

Besides a preservative Bay State
Coating is a beautifier. White and
a variety of attractive tints offer a
selection that meets individual
tastes.

Entrust your handiwork to the
Bay Stater's care. Write for Book-
let No. 19, which tells you a lot
about "Bay State" and ask for a
sample which will prove all the
book says. Do that today.

Wadsworth, Howland & Co., Inc.

Paint and Varnish Makers
Boston, Mass.

New York Office: Architects' Bldg.

BAY STATE

Brick and Cement Coating



FLOORS

The Wood-Mosaic Kind



For every home—Old or New. Can be in-
stalled by your mechanics. Our 5/16" flooring
can be laid in old or new houses. We make all
kinds and thicknesses; Wood-Carpet, strips,
Plain and Ornamental Parquetry, Tongue and
Groove Flooring.

Send accurate measurements of rooms for
colored sketch with exact estimate of cost of the
flooring required. Instructions for laying and
finishing accompany all orders shipped.

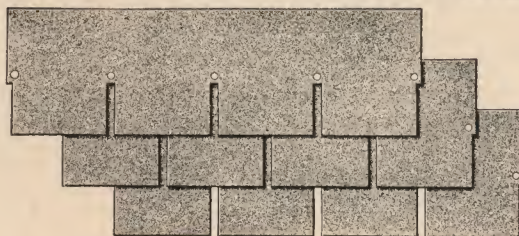
Send for free catalogue in natural wood colors.

Wood-Mosaic Company

32 Hebard St., Rochester, N. Y.

Saw Mill and Flooring Factory, New Albany, Ind.
Sales Office and Parquetry Factory, Rochester, N. Y.

REX STRIP SHINGLES



Save at Both Ends

DEALERS who sell and builders who
use Rex Strip Shingles save in many
ways.

These shingles cost less than individual
shingles, and weigh only 185 pounds per
square. Thus the dealer saves, even in freight,
and passes his saving along to the builder—
who in turn requires less nails and less labor
of nailing than with individual shingles.

This combined saving makes it easier to sell the roof
to the house owner.

Our Big Catalog No. 20 that tells all
about Rex Strip Shingles—and other
Rex Products—will be mailed (samples
included) on request.

The Flintkote Company, Inc.

98 Pearl Street, Boston, Mass.

NEW YORK 1104 Equitable Bldg. CHICAGO 651 Peoples Gas Bldg. NEW ORLEANS 701 Hennen Bldg.



Exposition Building, Erie, Pa.

Stucco Finish on Bishopric Board.

Architect, Jos. Lee, Erie, Pa.

NOW the Stucco Building is Preferred

Stucco is admittedly an artistic and attractive exterior finish. And *now* it can be made *lasting* and *economical*. Bishopric Board makes it possible. How? By applying principles that ages of actual use in building construction have proven the most efficient.

First, your stucco mixture *must be right*. This is *important* but easily accomplished if correct instructions are followed—our catalog contains full information about mixing stucco.

Now apply it properly on a *background of Bishopric Board*. Note how it is *anchored* to the background! Those dovetailed joints between the lath *clinch* the stucco—it *can't* let go! And nails through every lath hold the Bishopric Board firmly and securely to the building. There is *no breaking away* and *sagging*, causing the stucco to crack and chip off.

The lath in Bishopric Board are *thoroughly creosoted* to preserve them. They are imbedded in Asphalt Mastic on a background of heavy fibre board, making a fire-resisting combination that is proof against vermin, changes in temperature and moisture.

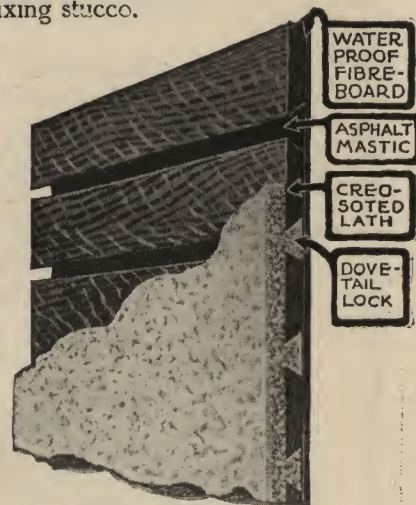
Bishopric Board will add years to the life of a building and make it warmer in winter and cooler in summer.

Finally, Bishopric Board, under the severest scientific tests and in actual use, has *proved* its superiority.

The Bishopric Manufacturing Co.

913 Este Avenue

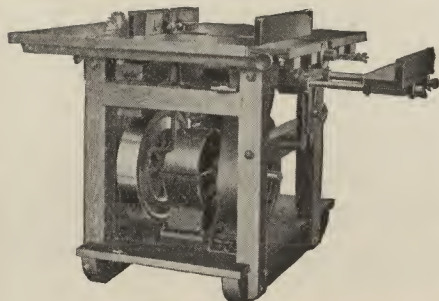
Cincinnati, Ohio



Bishopric Board clinches the Stucco

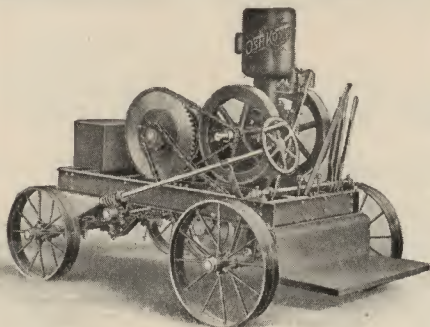
Send for free samples and our book "Built on the Wisdom of Ages." It tells all about Bishopric Board and gives some interesting scientific tests. It illustrates homes and other buildings constructed with Bishopric Board and gives letters from builders, architects and users.

OshKosh Service



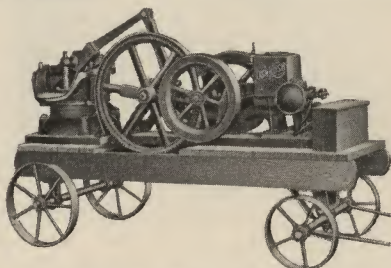
Eveready Saw Rig

Here's a Portable "Planing Mill" which will do any work you have to do and do it right. It joints, bores, sands, rip saws, cross cuts, jig saws, rabbets, bevels, mitres, tenons and grinds. It's a whole "plant" and it is portable, too. Can be taken right out on the "job." Substantially made and moderately priced.



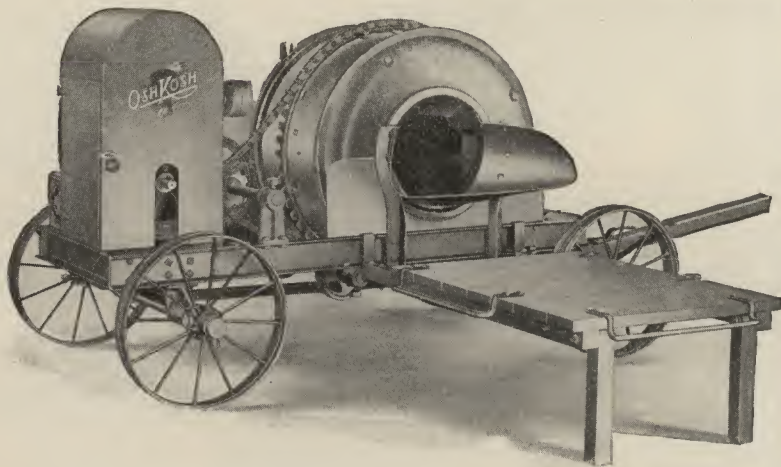
Oshkosh Back Filler

One user wrote us that this machine would do the work of thirty men. We know that it will cut the cost of back-filling 75%. It works, too, where teams can't work. It's a self-tractor and moves forward as the "fill" is completed and has plenty of reserve power furnished by a 6 HP. gasoline engine. Requires but one man to operate machine and two men to work the scoop.



Oshkosh Trench Pump

This pump will run a full ten-hour day without attention after starting for less than thirty-five cents. The pump is of the rubber diaphragm type and power is furnished by a 2 H.P. gasoline engine. Guaranteed to have sufficient power and to be dependable. Furnished on skids or trucks as desired.



THE Oshkosh Low-Loading Mixer is a top-notch quality product—that's been proven—and it renders uninterrupted service—that's been proven, too. But a time comes in the life of every machine when it requires adjustment, some little part becomes worn or accidentally broken. That's the time Oshkosh Service proves its worth. Every Oshkosh dealer can be depended upon to render the owner of ar



Low-Loading Mixer

just the service he requires and at the time he requires it. That's the big broad meaning of Oshkosh Service.

To mix and deliver two batches a minute is quite a stunt with any other than an Oshkosh Low-Loading Mixer. But this big little mixer does it often, for its "four-motion" mix is very rapid and exceedingly smooth and thorough. Its easy loading, direct from wheelbarrow, and its low discharge, directly into the wheelbarrow, insures a remarkable saving in time and labor.

There's an Oshkosh Mixer for your particular needs. Write today for catalog and book "Facts and Figures." There are other Oshkosh products of equal worth of the same Oshkosh quality. Mention any other described on this page that you are interested in and we will include descriptive literature.

Liberty Bonds Accepted in Payment at Face Value

Oshkosh Mfg. Co., 102 Buck St., Oshkosh, Wis.

The One *Certain* Kind That Leaves Nothing to *Chance*!

THERE is a certain lock which you *know* will do exactly what you want it to do in the structure you are building. There's a *certain* roofing, and a *certain* waterproofing, and a *certain* paint that you are absolutely sure are right.

When it comes to garage hardware, the especially designed, dependable, sturdy, durable, handsome and *certain* products bear the brand



Because no garage owner wishes to have his car smashed by a wind-swinged door, he insists on having protection. STANLEY Garage Door Holder No. 1774 locks the door open, preventing damage to the car entering or leaving the building.

STANLEY Bolts fasten firmly and securely.

STANLEY Butts and Hinges hold the doors in position, prevent sagging and keep the garage weather-tight.

STANLEY Latches and Door Pulls are well made, operate easily and are attractive in appearance.

Specify STANLEY'S—the *certain* garage hardware!

Today send for booklet on STANLEY Garage Hardware. Sent free on request.

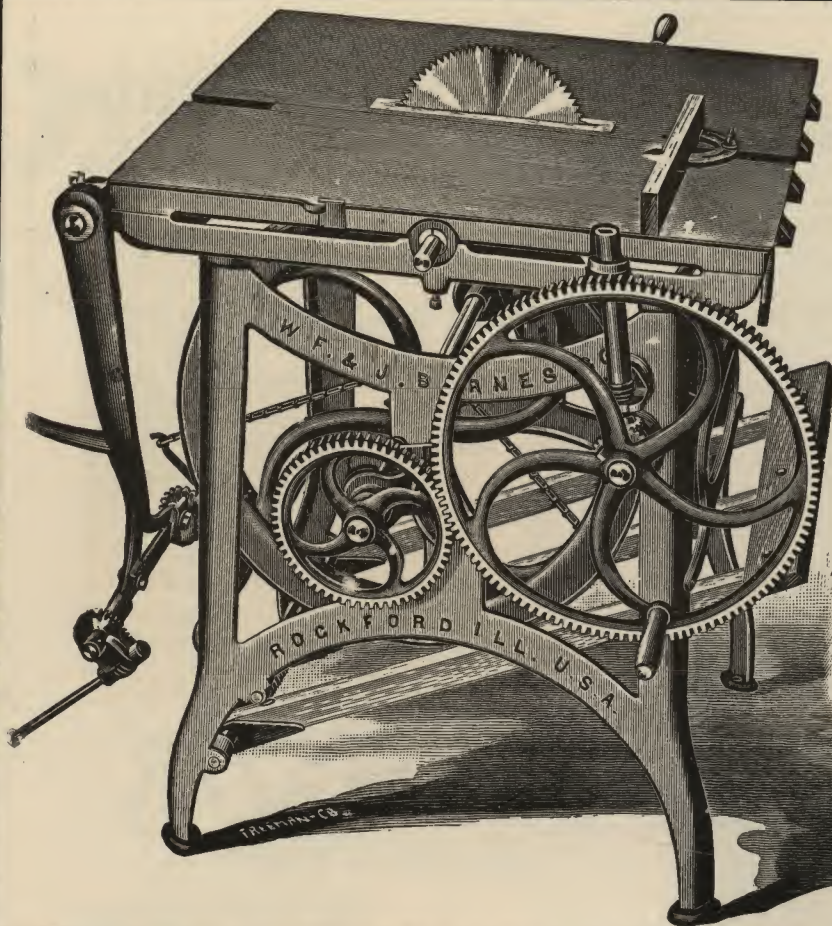
The Stanley Works

New Britain

Conn., U.S.A.

NEW YORK
100 Lafayette Street

CHICAGO
73 East Lake Street



BARNES Foot and Hand Power Machinery

For CARPENTERS and BUILDERS

Our New Hand and Foot Power Circular Saw No. 4, the strongest, most powerful, and in every way the best machine of its kind ever made for ripping, cross cutting and for grooving, graining, dadoing and rabbeting. Solid iron table planed perfectly true.

We make nine other machines for wood workers.

THE ONLY COMPLETE LINE OF SUCH MACHINES MADE

**STRONG
PRACTICAL
DURABLE**

Catalogue Free on Application

W. F. & John Barnes Co.
71 Ruby St., Rockford, Ill.

**Cut the
COST
of Your
FLOOR
SURFACING**

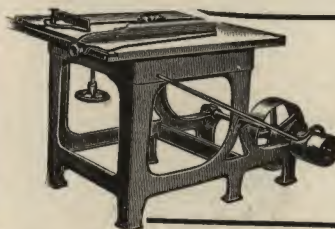
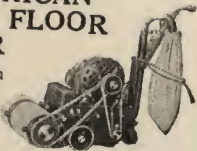
THE "AMERICAN UNIVERSAL" FLOOR SANDER

Saves the wages of five men
on your pay roll.

Let us tell you about it.

American Floor Surf.

Machine Co. 5 1 S. St. Claire St. Toledo, O

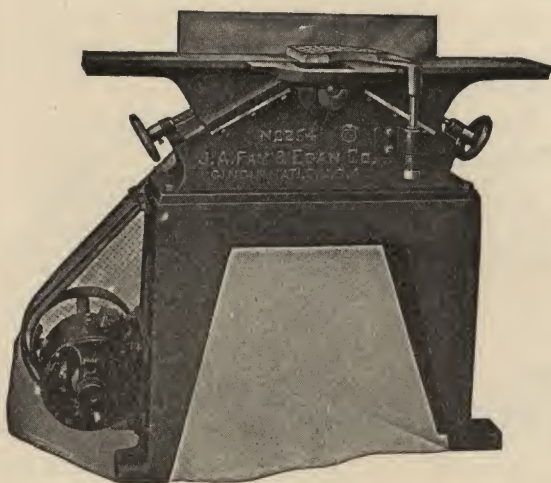


LOOK!

Only \$70.00 for an all
Iron SAW BENCH with
countershaft complete. It
will pay you to investi-
gate. Send for circular
giving full particulars.

R. E. KIDDER

22 Hermon St., Worcester, Mass.



—a really practical Carpenter's Hand Planer

bench or pedestal—with or without motor

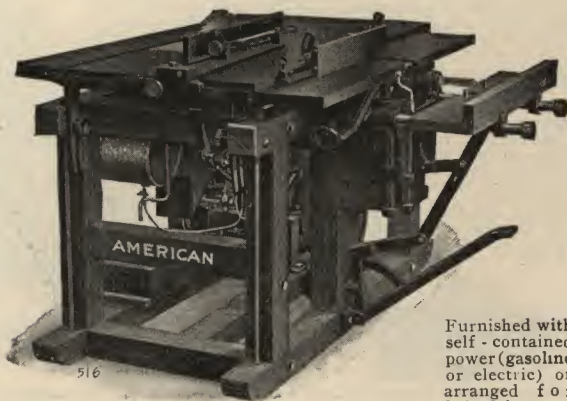
Don't buy a toy—get a real machine—6½"
Safety head—thin air-hardened steel knives
adjustable bevel fence—removable steel lips—
rabbetting arm—pedestal that gives your feet
clearance—easy to keep clean under the ma-
chine—a practical time saver and money maker.

Write for Bulletin H-7

J. A. FAY & EGAN CO.
221-241 W. Front St., Cincinnati, Ohio

Buy a Wood-worker that will be a Per- manent Investment

You're not buying a variety woodworker just for this month, or even for this year. You're putting money into it as a permanent investment that will pay good dividends indefinitely. Then look carefully into the service qualities of the woodworker you buy.



Furnished with self-contained power (gasoline or electric) or arranged for belt drive.

"AMERICAN" VARIETY WOOD-WORKERS

are built with the idea of being permanently serviceable, continuously profitable. Besides bringing you all the functions that you can get in any woodworker, an "American" will bring the splendid "American" quality which makes for long service, big output, easy operation, low upkeep costs.

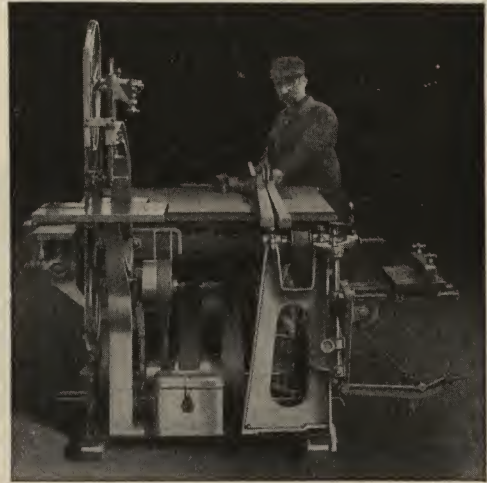
Send today for bulletin 67.

American Saw Mill Machinery Co.

1362 Hudson Terminal
NEW YORK CITY

C. H. & E. Portable Saw Rigs

Six Complete Sizes—
3 to 6 H. P. Engine or Motor



The C. H. & E. No. 6 Portable Saw Rig

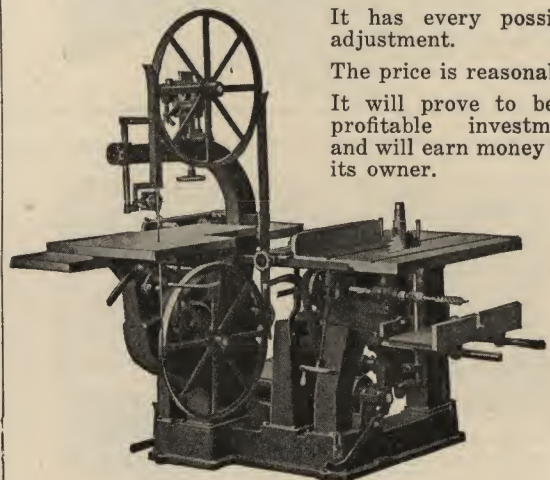
Combination or Just Rip and Cross Cut
Saw Rigs. Write for Catalog.

C. H. & E. Manufacturing Co., Inc.
330 Mineral Street, Milwaukee, Wis.

Increase Your Earning Capacity

By increasing your working capacity without adding to the cost for labor. This is the problem the CRESCENT UNIVERSAL WOODWORKER is solving for many a builder.

Four men can work on it at one time without interfering with each other.



It has every possible adjustment.

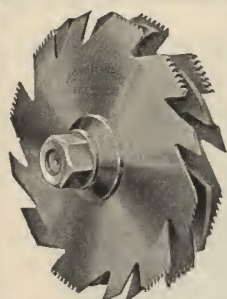
The price is reasonable.

It will prove to be a profitable investment and will earn money for its owner.

THE CRESCENT MACHINE CO.

206 MAIN STREET

LEETONIA, OHIO



Patented Nov. 29, 1892.
Feb. 19, 1910.

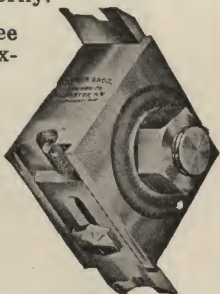
For Your Saw Rig Huther Bros. Dado Head

will cut perfect grooves, any width, with or across grain. It consists of two outside cutters and enough inside cutters to make the desired cut.

The Head comes to you ready to use and guaranteed to do your work satisfactorily.

Ten days' free trial at our expense.

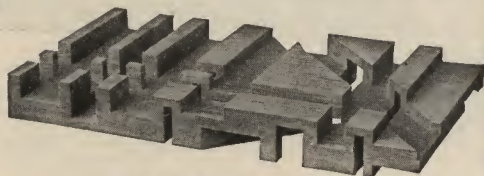
This cutter head can be used on the saw table. Knives are adjusted by headless set screws and are held by dovetailed slides and bolts. Runs like a solid cutter. Any shape knives made to order.



Patented Dec. 30, 1913.

Showing position of cutters on mandril.

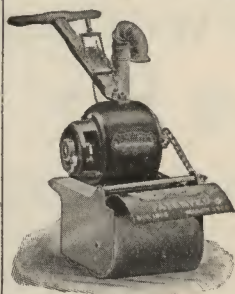
Our No. 34 Catalog sent on request, describes full line of tools for saw rig.



Grooves cut with Huther Dado Head.

HUTHER BROS. SAW MFG. CO.
2500 University Avenue Rochester, N. Y., U. S. A.

THE IMPROVED RAPID FLOOR SURFACER



will surface right up to the wall or baseboard without the use of Edge Roller. Just the machine you would want for surfacing all kinds of wood floors, whether old or new. Will smooth down rapidly and easily all joints or warped edges. Perfect results guaranteed. More than 20,000 of our machines now in use. Guaranteed against defect in material and workmanship for five years.

Send for our Free Trial Offer.
It will interest you.

M. L. SCHLUETER

Made in several sizes 225-27 W. Illinois St. Chicago, Ill.

Stop Making "Borderwork"

around your baseboards—which results when you use a narrow edge roll attachment, as its work is uneven and looks different from the rest of the room when finished. Get the same uniform work right up to baseboards that you do throughout the room by using

The Improved Type Automatic Ball-Bearing Electric Floor-Surfacing Machine

The sanding roller is mounted so one end extends just beyond the side of the machine—easily adjustable to either side so that the wall all around the room can be reached and the Little Automatic Electric Surfacing Machine (shown below) is a wonder for removing old varnish from desk tops, tables, counters, etc., as well as for dressing up new work.

Free Trial Offer

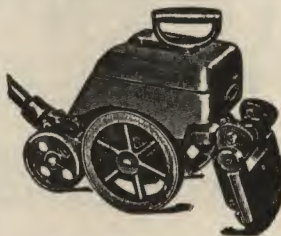
on either of these machines. Write to-day for full information.

WAYVELL CHAPPELL & COMPANY
358 W. Madison St., Dept. E, Chicago, Illinois
Phone Franklin 4160



FREE to YOU FOR 10 DAYS

THE TRIPLE "A" SPRING DRIVEN FLOORSMOOTHER



To enable you to try our machine out, and learn for yourself its many superior qualities, we will send you one of our BRAND NEW Triple "A" SPRING DRIVEN Floorsmoothers for 10 days' FREE TRIAL, freight prepaid.

The Triple "A" is the only floor scraper on the market equipped with a SPRING MOTOR DRIVE—the only convenient motive power. Requires neither fuel nor current—always on tap when wanted. It lessens the work fully two thirds. Only one motion required—the push forward. This winds the SPRING MOTOR which automatically stops the machine and sends it back on the cutting stroke. Will save its cost on one job.

Write today for full particulars regarding our special trial offer.

TRIPLE "A" MACHINE COMPANY
Room 101, 4127 Ravenswood Ave. Chicago, Ill.

PARKS PLANING MILL COMBINATION

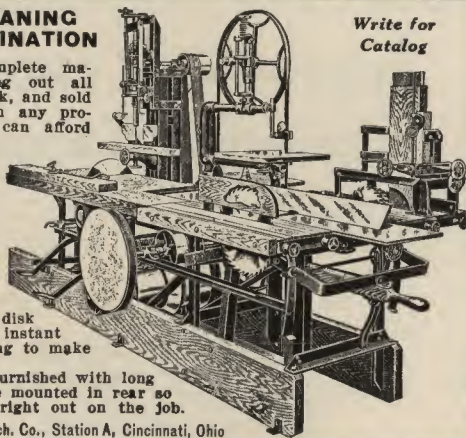
The most complete machine for getting out all kinds of mill work, and sold at a price which any progressive builder can afford to pay.

During the screen season, this machine will pay for itself in a couple weeks.
Rip saw
12" Jointer
22" Band saw
Swing cut-off saw
Shaper

Upright mortiser
Tenoner Sand disk
All ready for instant use without having to make any changes.

Machine can be furnished with long bases with engine mounted on rear so it can be taken right out on the job.

Parks Ball Bearing Mach. Co., Station A, Cincinnati, Ohio



Write for
Catalog



Buy An Engine

On Your Own Terms.

30 Years of success in making and selling high-grade engines enables me now to sell direct to the user on practically his own terms. Any worthy, creditable man anywhere in the U. S. can accept my offer, and be sure of a reliable engine at direct from factory prices.

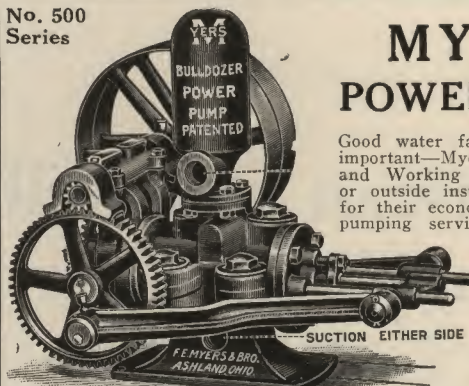
Ed. H. Witte
WITTE
High-Grade ENGINES

are made in sizes 2, 3, 4, 6, 8, 12, 16 and 22 H.P.—Kerosene or Gasoline. Particularly adapted for farm and shop. Hundreds in use in every state. My Free Book, "How To Judge Engines," explains fully what you should know before buying.—ED. H. WITTE, Pres.

Witte Engine Works 3198 Oakland Ave., Kansas City, Mo.
3198 Empire Bldg., Pittsburgh, Pa.



No. 500
Series



MYERS POWER PUMPS

Good water facilities are always important—Myers Power Pumps and Working Heads, for inside or outside installation, are noted for their economical and uniform pumping service. Many Styles.

Many Sizes, Gasoline Engine, Electric Motor or any Power. Simple in construction, easy to instal and operate, efficient and satisfactory. Catalog No. P17, gladly mailed.

F. E. MYERS & BRO., Ashland, Ohio



Good Enough for the Millionaire's Palatial Home—Cheap Enough for the Modest Cottage

Steel Sewed Columns are absolutely perfect in architectural proportion. They positively will not open at the joints, check or warp. They are sold with the distinct understanding that if not satisfactory in every way, they are returnable at our expense.

Catalogue explains the construction and shows many beautiful illustrations. Write for it.



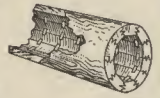
STEEL SEWED TAY-LOCKED COLUMNS

JOINTS CAN'T OPEN

MADE OF WOOD SEWED WITH STEEL

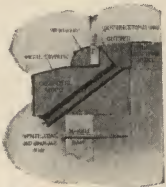
They're different
Made to last
Cost no more

Write for Catalog F—A beautiful free design book worth owning



AMERICAN COLUMN CO.
Battle Creek, Michigan

Learn More About Coulson Store Fronts



Send us drawings of both plans and elevation of the front, or a pencil sketch will do, also correct measurements and we will send you some information on Coulson Store Front Construction that may surprise you. We furnish everything complete ready to install. Many new exclusive features—patented for your protection and ours. Catalog and blue prints sent without obligation.

Coulson Ventilating and Drainage Sill

Write today.

J.W. Coulson & Co., 107 W.Spring St., Columbus, O.



YOUR WILL KEEP YOU BUSY

But it will never keep you busy if you don't order it until Spring.

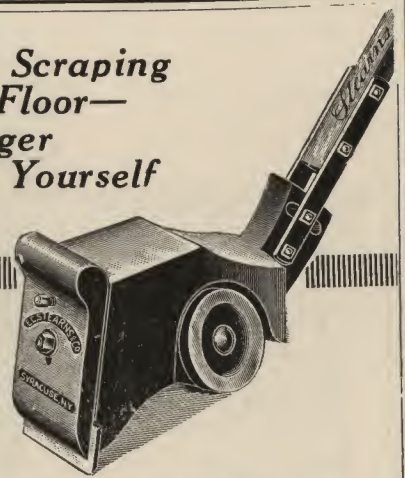
YOUR woodworking machine can't earn money for you while it waits in our warehouse for your shipping instructions!

A FAMOUS woodworker is the best insurance against the habitual—but unnecessary—dead days of winter.

Make this winter a "harvest time"—go to it early with a FAMOUS! Ask us for Catalog 10.

The Sidney Tool Co.
Sidney, Ohio

**A Cleaner Scraping For Your Floor—
and a Bigger Profit for Yourself**



Entire freedom from ruts, mars, scratches, waves, wheel depressions—however large the surface, you can make your floor smooth as glass, in much less time than is needed for hand labor, with the

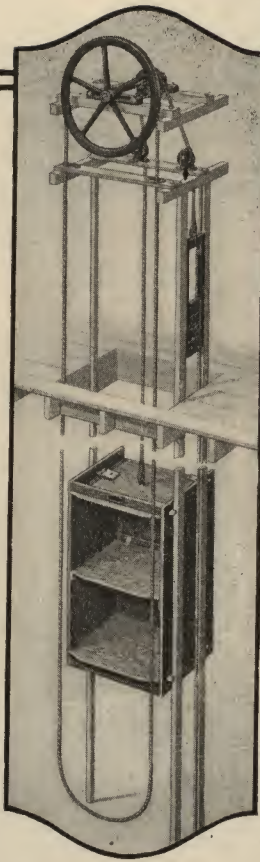
Stearns
FLOOR SCRAPER

It gets into every corner, flush with the wall, the blades of highest grade carbon-tempered steel cutting evenly without waste. The two-edged knife allows turning when one side becomes dulled.

The Stearns Floor Scraper has movable handle and rubber tires. Simply and durably constructed to give the greatest floor scraping satisfaction at the lowest initial and upkeep cost.

E. C. STEARNS & COMPANY
114 Oneida Street Syracuse, New York

SEDGWICK



HOW YOU ARE PROTECTED BY A GUARANTEE

The Sedgwick policy protects you and your profits on the dumbwaiter installation.

By its guarantee, which reads:

"Sedgwick Dumbwaiter Machines are guaranteed for five years from date of purchase and will be repaired at any time within that period if returned to the factory prepaid."

Upon this guarantee we stand unequivocally.

Which means to the user satisfactory operation of the machine at no cost except the original outlay—to you a comforting sense of protection for your client, yourself and your profits.

To line up with Sedgwick Service write for our Service Data Sheet giving explicit and authoritative dumbwaiter information.

Sedgwick Machine Works

123 Liberty Street

New York City

Hand Power
Elevators and
Dumbwaiters
Exclusively

TIPS FROM THE TRADE

"Your elevators and Dumb Waiters have proven universally satisfactory, shipments have been prompt and changes and details have been handled with accuracy and dispatch."

The T. B. RAYL CO., Detroit, Mich.

The
Trailer
You
have
been
Looking
For



THE ROGERS LUMBER TRAILER FILLS A LONG FELT WANT

The Rogers All-Steel Trailer, equipped with extension tongue, will haul lumber and poles up to 30 feet in length.

Capacity, 2000 lbs., and will stand up indefinitely under all strains.

The strongest and most durable trailer ever built.

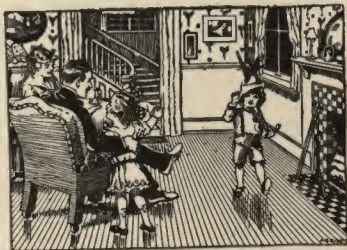
The leading builders are using them—why not you? Write for our trial proposition.

ROGERS BROTHERS COMPANY

Albion, Pa.

Beautiful OAK FLOORS Everywhere—Why? Because

—Oak Flooring by right of superior merit and conquest is "AMERICA'S BEST FLOORING."
WOMEN prefer OAK FLOORING for the reason it is rich and cheerful in color, and offers unlimited possibilities to give the home that coveted touch of elegance.



- OAK FLOORING is DISTINCTIVE, BEAUTIFUL, and SUBSTANTIAL, three very vital reasons why so much OAK Flooring is in use today.
- SERVICE and SATISFACTION are assured if OAK FLOORS are used.
- Of all the hardwood flooring in use today Oak stands pre-eminent for color, texture, and durability.
- KEEPS the "FOR RENT" and "FOR SALE" signs off of the property. Landlords know what is best in flooring.

See our Page 379—1917 Sweet's Catalogue.

Write for Booklets—"America's Best Flooring."

The OAK FLOORING SERVICE BUREAU
1603 Union Trust Building, Cincinnati, O.

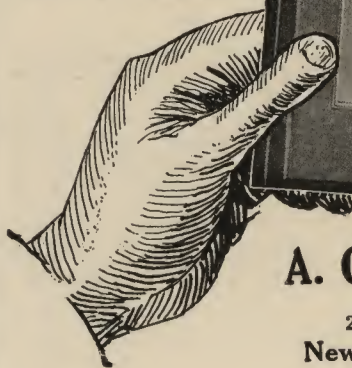
Fire- Proof Doors

Metal and Metal
Covered

Standard Sizes in Stock
of All Designs

Agents Wanted

Write for Booklets and
Price Lists—also our
Agent's Proposition.



A. C. Chesley Co.
Incorporated
279 Rider Avenue
New York City, N. Y.

WANT THE BEST LONG-LEAF PINE THAT GROWS?



"THERE'S A DIFFERENCE"



Specify **"Bogalusa"**

APPRECIATE that "Bogalusa" branded on every stick means "Automatic Safety for the Buyer?" REALIZE that the Strongest and Everyway Best Structural Wood in the World's Markets is Our Own Native Product, and that "BOGALUSA" is the symbol of the very best of

Best Long-Leaf Pine

"THERE'S A DIFFERENCE"

Dependable Dimension Stock—Heaviest Structural
Timbers—Every Piece Identified.

Particular about integrity of Manufacture, Grading and Count? Understand the value of "every foot a foot?" For positive assurance of satisfaction simply state that every stick must be guaranteed by the simple word "BOGALUSA." The Great Southern Lumber Company, operating the largest lumber manufacturing plant in the world, places its entire responsibility and resources at your command when you put a "Bogalusa MUST" on your order. Don't ASK for "Bogalusa"—but TELL them "Bogalusa," and "nothing but."

"THERE'S A DIFFERENCE."

Your request (on business stationery if convenient) will bring the Bogalusa Book, "a liberal education on the correct and economical use of Long-leaf Pine," and including all official gradings. THE LARGEST SAW-MILL IN THE WORLD DESIRES TO SERVE YOU. May we?

GREAT SOUTHERN LUMBER COMPANY
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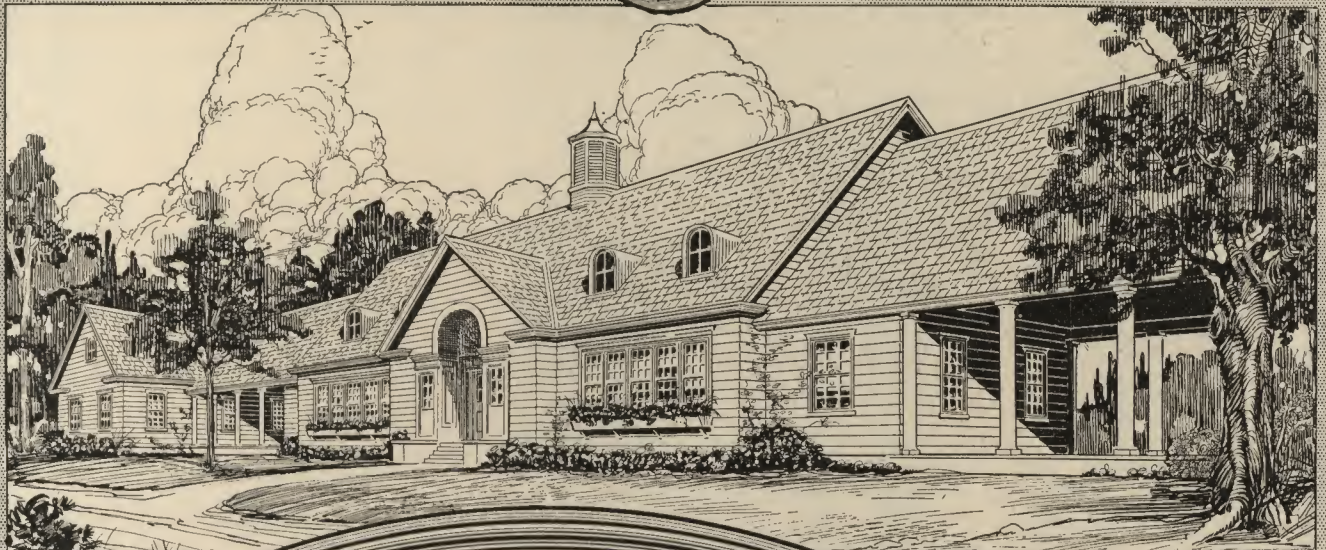
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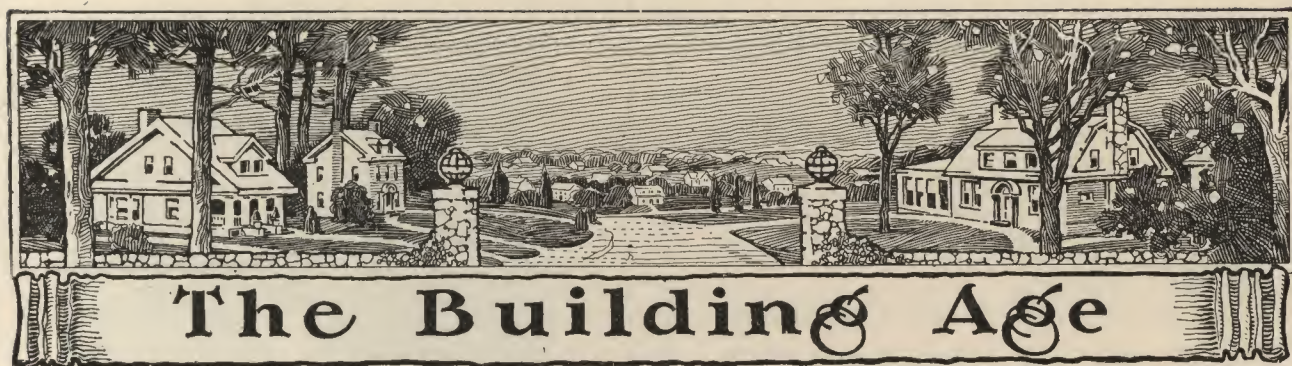


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BUILDING AGE

NEW YORK, OCTOBER, 1917

A Suburban Residence of Dutch Colonial Architecture

An Unusual Feature Is the Main Entrance
Directly Through the Masonry of the Chimney

ROAMING through suburban and country districts of the country the observing builder comes in contact with dwellings of varied description, ranging through the many intermediary stages all the way from the modest cottage or gate lodge to the most pretentious mansion and

his curiosity to know more of the construction and arrangement within.

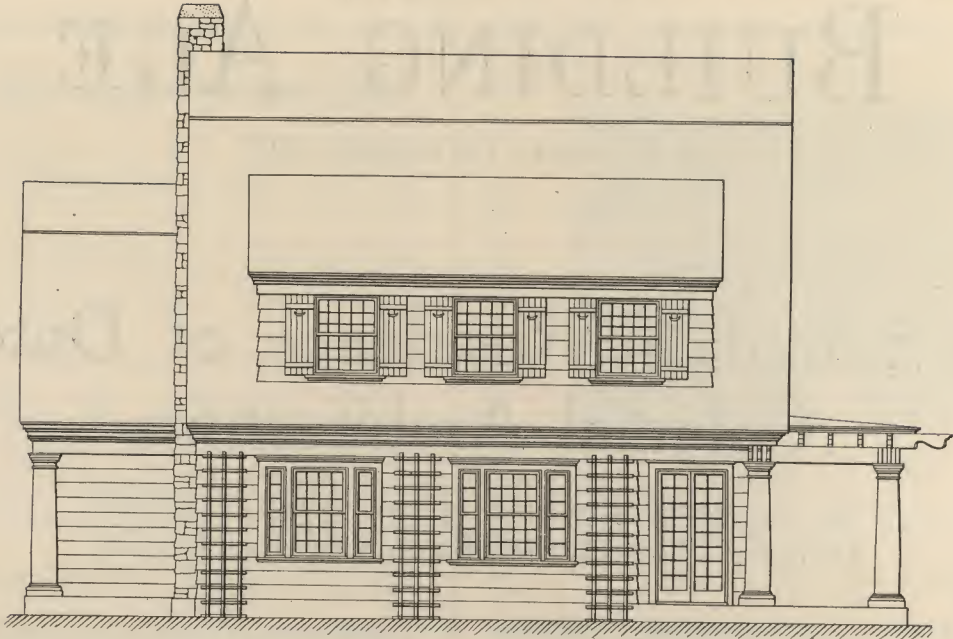
Such a dwelling forms the basis of the present article, the striking feature here being the main entrance to the house directly through the masonry of the outside chimney. At the right of the en-



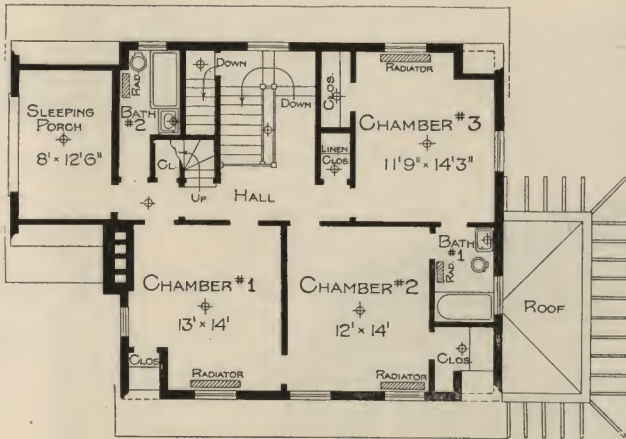
A Photographic View of the Completed Dwelling with Its Picturesque Setting—Smith & Davis, Architects, New York City

varying in their architectural aspects from one extreme to the other. Many possess unique features of exterior treatment which immediately fix themselves upon the attention of the beholder and arouse

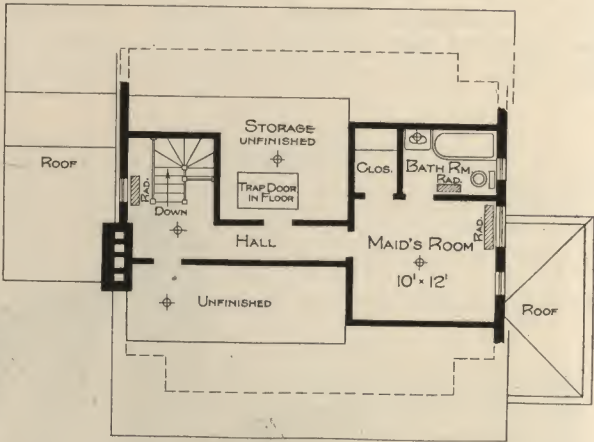
trance doorway, the chimney takes care of the living-room fireplace, which is built into it at this point, and also of the flues from the cellar. The left side of the chimney takes care of the flue from



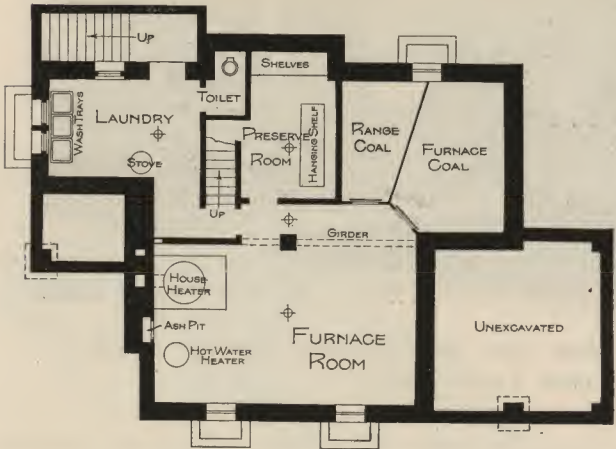
Front Elevation of the House—Scale 3/32 In. to the Foot



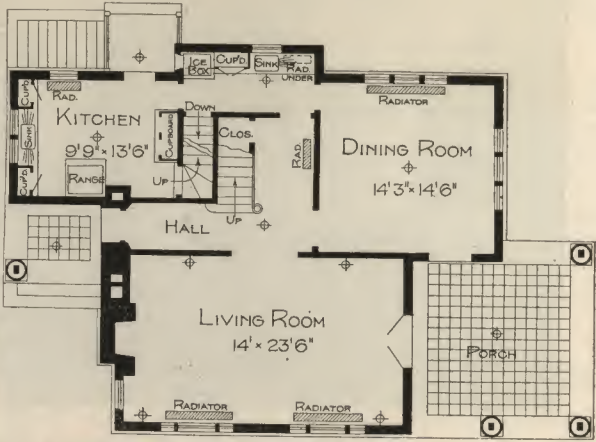
Second Floor Plan—Scale 1/16 In. to the Foot



Plan of Attic—Scale 1/16 In. to the Foot



Basement Plan



First Floor Plan—Scale 1/16 In. to the Foot

The Front Elevation and the Floor Plans of the Dutch Colonial Suburban Residence

the kitchen range, the flue lining at the point where it is carried over the doorway being of cast iron.

The dominating lines of the house are Dutch Colonial, with the gambrel, however, broken further up than is commonly the case, so that the lower part of it comes down in a steep slope, and then turns outward with a graceful sweep. The triple dormer breaks the lower roof lines and gives light and head room to the front rooms on the second floor.

At the extreme right is a porch with pergola effect. At the extreme left end of the house is the kitchen, and the overhang forms a protection from the weather for the entrance doorway. Lattice is effectively placed on the main story on each side of the window, for trailing vines thus, aiding greatly

mond-shaped panes of glass that are also Colonial in spirit. At the far end of the living room are casement windows opening onto the porch, which latter has a floor of old stone flagging broken at random into different shapes and sizes, laid over a cinder-concrete bed. The porch also communicates with the dining room by casement windows.

At the far end of the hall is the dining room, two views of which we present in the accompanying illustrations. The trim is Colonial, the panel and wainscoting being particularly so. The dining room communicates with the kitchen by means of a pantry which can also be reached from the hall.

The kitchen is conveniently arranged, the sink being placed beneath two windows so as to receive



View in the Living Room Looking Toward the Open Fireplace

in giving that adaptability to site so necessary to the Dutch Colonial house.

Just over the kitchen can be seen a large window with curved head casing which gives light to the sleeping porch. The rear of the house is rendered commodious by a dormer similar to the one in front.

The shutters are of the familiar Colonial type and have the customary crescent-shaped saw cut in them.

The color scheme is the one so typical of Colonial houses—green shutters and white clapboarding, together with roof shingles of a greenish brown tinge.

The entrance through the chimney leads into a small hall, at the right of which is the living room with large fireplace of brick and wood combined. At the right of the fireplace are bookcases with dia-

plenty of light. At each side of the sink is a cupboard. There is also a cupboard at the entrance to the kitchen.

The second story contains three bed rooms, a sleeping porch and two bathrooms, one of the latter communicating with two of the bed rooms. At the left of the main stair well is a flight leading to the attic, containing a maid's room and a bathroom together with ample storage.

The footings of the house are composed of large stones and are 8 in. wider than the foundation wall. The latter is composed of blue stone taken from the ground in the vicinity of the site and was laid in cement mortar mixed in the proportions of one of cement to $2\frac{1}{2}$ of sand. The outside of the founda-

tion wall was coated with Portland cement mortar to the sill.

The chimney is also constructed of blue stone laid up in Portland cement mortar, and the flue linings are of tile, excepting it is of cast iron where the kitchen flue runs across the doorway. The chimney has a cement cap.

The framing timbers are of spruce, the sills being 4 x 6 in.; the posts 4 x 6 in., tenoned into the sill and the floor joists 2 x 10 in., on centers. Where the joists rest on a masonry wall, they are fastened by beam anchors of the Goetz box anchor type and set not over 4 ft. on centers. The beams resting on the masonry wall have their ends bevelled 3 in.

The floor joists are bridged by 2 x 3 in. stock

in between the joists with concrete to a level of 6 in. above the floor line.

The rafters are covered with 1 x 2 in. shingle lath which received 18 in. red cedar shingles exposed 5½ in. to the weather. The underhangs were ceiled with 7/8 x 3 in. North Carolina pine ceiling boards laid with close joints and blind nailed. The overhangs were given three coats of best light hard oil varnish. The flashings were of 16 oz. hard rolled copper.

The walls were covered with 7/8 x 8 in. shiplap, lapjointed and surfaced North Carolina pine boards laid diagonally and nailed with 8d nails. Over the sheathing was placed black Neponset building paper lapped at least 6 in. This in turn received 12 in.



The Dining Room, with Door to Porch at the Left and a Glimpse of the Living Room Fireplace Across the Hall at the Right

once in every span over 8 ft. and twice in every span over 16 ft. The attic ceiling joists are 2 x 4 in. The studs are 2 x 4 and 2 x 6 in., doubled at the tops and sides of all openings. The wall plates are 4 x 4 in., rafters 2 x 8 in. set 24 in. on centers, valley and hip rafters 2 x 8 in., collar beams 1 x 6 in. Headers and trimmers are doubled.

Framing around chimneys, fireplaces, stairs, etc., is of mortise and tenon joints well spiked. Headers over 6 ft. long are hung in stirrup irons. No framing was allowed within 2 in. of the chimney. Openings over 3 ft. are trussed, and under this width 4 x 4 in. lintels were used. The pergola plates are 4 x 10 in. The space at the foot of all studs is filled

cedar siding exposed 10 in. to the weather. All corners were mitered with cove mold between the masonry and weather boards. The latter were given three coats of pure linseed oil and white lead.

The exterior trim is of white pine. The ceiling of the entrance porch roof was sheathed and the space between the floor above and the porch ceiling was filled with mineral wool.

The principal doors throughout the house are of the single panel type. A plate glass mirror is in the door of the owner's bed room.

Windows are of both casement and double hung type. The glazing is double thick American glass.

The main stairs are set on 3 x 6 in. carriage

timbers spiked in place after the stairs were up. The main stairs for the first and second floors have treads $1\frac{1}{4}$ in. thick and risers $\frac{7}{8}$ in. thick tongued and grooved together and housed into the wall frames, being wedged, glued and blocked. The newels are of birch 5 in. square, ballasters are $1\frac{1}{2}$ x $1\frac{1}{2}$ in. and placed three to a tread. The stair treads and rails are of mahogany. The stairs leading to the cellar are of spruce.

The sub floors of the main sections of the house are of $\frac{7}{8}$ x 6 in. dressed hemlock run at right angles to the floor joists. Over this was placed rosin sized building paper. The finish floors in the first story are quartered oak laid herringbone fashion with a 12 in. border. At completion these were

Windsor cement, the work being two coat. Metal corner beads were placed on all corners and angles.

The floor of the sleeping porch is of $\frac{7}{8}$ x 6 in. hemlock over which was laid 10 oz. duck, this being turned up at the wall 9 in. where was placed a 10 in. x $1\frac{1}{2}$ in. base.

The bath room floor is constructed of a filling of cinder concrete upon which was placed a bed of Portland cement mortar of a 1:2 mix which in turn received 2 in. hexagonal tile. The walls were laid up with $\frac{1}{4}$ x 4 in. American Eucasustic white tile. The water closet was set upon a floor slab of Vermont marble 2 ft. square. The fixtures include Mott's "Euclid" enameled iron corner bath tubs 24 x 20 in. "Velasco" extra heavy vitreous lavatory



Another View of the Dining Room Looking Out Upon the Open Porch Through the Door at the Right in the Background of the Picture

given one coat of shellac and two coats of wax well rubbed in. The finish floors in the other sections of the house are of $\frac{7}{8}$ x $2\frac{1}{2}$ in. North Carolina pine laid with a border. At completion these boards were oiled two coats well rubbed in.

The interior trim is of clear birch primed on the back before being set in position, and given a coat of Pratt & Lambert's shellac and varnish. The trim in the basement and the third floor is of straight grained cypress. All interior woodwork was given four coats of white paint and one of enamel.

The walls were lathed with spruce lath placed 3-16 of an inch apart and plastered with King's

with vitreous pedestals; No. 1 water closet combination, etc.

The kitchen is provided with built-in dressers and has a 30 x 20 in. Speakman enameled iron roll rim sink with integral back.

The house is lighted by means of electricity. The heating is a two pipe hot water direct system calculated to provide a temperature of 70 deg. within the house when it is zero weather outside.

This residence is located on Oak Ave. in Kissena Park, Flushing, Long Island, N. Y., and was erected for W. P. Smith, in accordance with plans and specifications prepared by Architects Smith & Davis, 16 East 47th Street, New York City.

The Ventilation of Dwelling Houses

Neglect to Provide for Air Change Quite General — Part Played by the Fireplace

By S. K. T.

ONE of the features of every building period is the erection of homes, which in many cases have no intelligent provision made for their ventilation at the season when the conditions prohibit the opening of windows for the purpose of changing the air. This observation is prompted by the following, which was prepared in response to an inquiry for information on the ventilation of American homes.

Little Information on the Subject

The ventilation of a home is a subject on which there is very little information. In some instances no provision is made for ventilation. It is a matter of record that the investigation of engineers shows that, regardless of any provision for ventilation, the porosity of the material of which buildings are constructed and the leakage around doors and windows and similar openings provide one change of air per hour in a building. Heating engineers make a provision for heating this amount of air in order to maintain a comfortable temperature when figuring the heating requirements. That may be called natural or compulsory ventilation.

In a large number of the more expensive residences or mansions a number of open fireplaces are provided, and as a rule there is a fire going in an apparatus connected with some one of the flues in the chimney which serve these open fireplaces. Consequently, the heat of the chimney induces an updraft and the fireplace serves as a ventilator even when there is no fire in it. In effect this is very apt to cause a low temperature near the floor of buildings because nothing can go out of the chimney in the way of air unless other air comes into the room to take its place, and if the temperature outdoors happens to be zero or below, the temperature up to the height of the opening into the fireplace is apt to be different from what is desirable, even though the upper part of the room might be at an uncomfortably high temperature.

Effect of Using Several Fireplaces

Then, again, the use of several fireplaces may over-ventilate the building and take out more hot air than the heating apparatus is arranged to supply. So much for that form of ventilation.

In isolated instances small registers have been placed in the baseboard of different rooms, opening into the space between the studs in the partition, and this space has been connected by means of studs of about the same size with a large cen-

tral shaft or duct passing through the roof and terminating in one of the so-called ventilators, chimney caps or constructions which exert an exhaust current when a wind is blowing. Some of these ventilators are said to work effectively with as low wind velocity as 3 miles per hour.

Very few of this character of installations are made. There is one or two in the vicinity of Philadelphia. In the rectory of a church in Cincinnati, Ohio, ducts of this character were led from the bathrooms, toilet rooms and two of the bedrooms to a ventilator of this sort.

Again, in connection with a chimney used in carrying away the products of combustion from the heating apparatus, exhaust ventilation is sometimes accomplished by running the smokestack up through the flue and then placing registers in the flue so that the space around the smokestacks could be utilized for exhausting the air to make room for fresh air. This is most frequently done in connection with the warm-air furnace heating systems, yet it can be used in connection with direct steam and hot-water systems just as readily.

Use of Ventilating Systems

There has also been installed a number of ventilating systems on which patents have been taken out. Here again registers 3 or 4 in. in diameter are placed at two or three or more places in the baseboard of a room, according to the size. These 3-in. pipes lead down to a general duct which enlarges as different connections are made with it, and the various ducts from different sides and parts of the building connect with a main duct which connects with the smoke pipe of the heating apparatus, so that the draft to the chimney is depended upon to do ventilation work. When the check draft is open, the air passes from the accumulating exhaust drum into the check draft and up the chimney. When the fire is to be forced, the check draft is closed and then the air enters the ashpit and passes under the grate, through the fire and up the chimney in that way.

This certainly makes it easier for hot air from the piping and registers of a furnace to enter the rooms, and facilitates their heating in cases where the rooms might otherwise be considered air bound and difficult to heat.

While the installation of such equipment is not very expensive, the appreciation of ventilation by the general public is not such as to create any substantial demand for it, although it is hoped it will grow in favor.



Appearance of the Finished Horse Barn on the Oakdale Farm at Ogden, Iowa

A Commodious Frame Barn For Horses

Plank Frame System of Construction
—Practical Details for the Builder

BY W. E. FRUDDEN

BARN construction is something in which the practical builder is always interested, more especially if he is doing work in the rural and agricultural districts of the country, and he will therefore find much in the illustrations and descriptive data here presented to command his attention. The subject of the article is a frame barn intended originally for Belgian horses, the



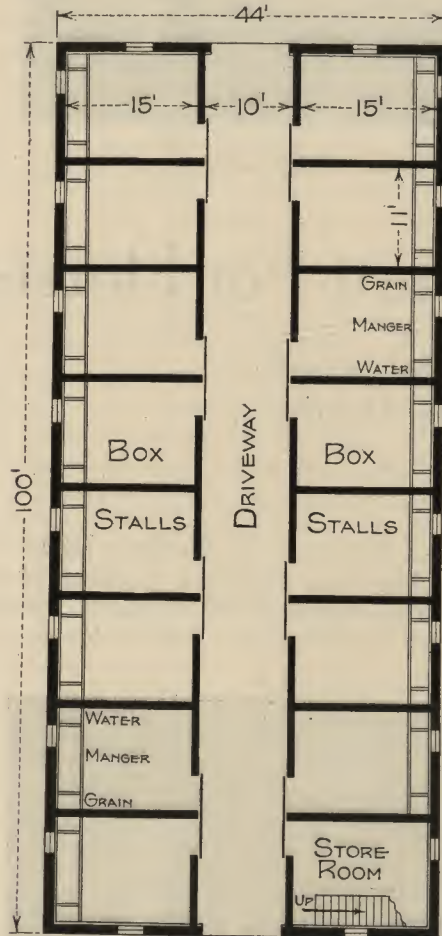
View in the Barn Looking Along the Driveway and Showing the Box Stalls for Horses on Either Side—Note the Construction of the Upper Sections

owner being a large importer of these animals before the present world-wide war began, but since the great conflict has put a stop to all importation of horses, the owner of this farm, which is known as the Oakdale, located at Ogden in Boone County, Iowa, is raising his own horses, and has won a number of prizes with his stock at fairs in the last two or three years. The farm is owned by C. G. Good, who has fully a quarter of an acre in barns. The one here illustrated and described is the largest and most modern on the place, and is perhaps as well equipped as any of its kind in that section of the country. It is built upon the plank frame system, and some idea of the details may be gath-

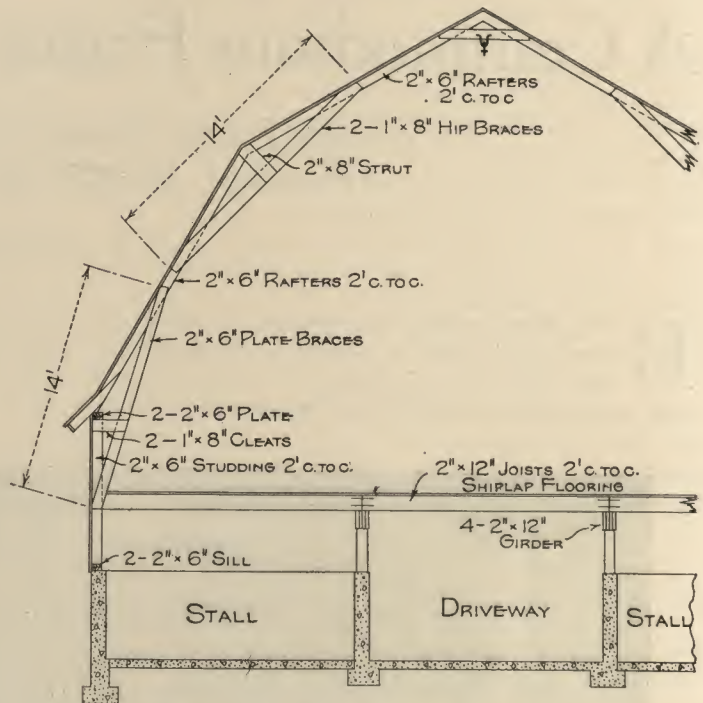
siding, while the roof is self-supporting. The frame is referred to as being very simple to erect, but it has withstood the elements and appears to be rigid in every respect. There are no heavy timbers in the building, but all are short length, which means economy in the way of building material.

An examination of the floor plan shows a 10-ft. driveway extending through the barn, which, by the way, covers an area of 44 x 100 ft. There are box stalls on each side of the driveway, these stalls being 15 ft. in length and 11 ft. in width, each one being provided with a chute for grain and also a manger for holding the feed as well as a watering trough. These feed boxes and watering troughs are of concrete and are built right into the walls.

The foundation of the barn through a height of 5 ft. is of concrete, and the same material is used in the walls of the stalls on the inside of the barn. The driveway floor is concrete and the stall floors are clay with a drainage base of coarse gravel. A window in each stall admits plenty of light and allows for good ventilation in warm weather.



Floor Plan



Vertical Cross Section Showing Framing

A Commodious Frame Barn for Horses

ered from the vertical cross section on the following page.

The girders are made up of four pieces of 2 x 12-in. timbers, and the sills of two pieces of 2 x 6-in. material. The studs are 2 x 6 in. placed 2 ft. on centers, the plates are made up of two pieces of 2 x 6-in. stuff and the plate braces are of 2 x 6-in. material, as are also the rafters, the latter being placed 2 ft. on centers. The struts are 2 x 8 in. The hip braces are made up of two pieces of 1 x 8-in. material, and the cleats are similarly constructed. The floor joists are 2 x 12 in. placed 2 ft. on centers, and support the ship-lap floor.

The outside of the frame is covered with drop

On the second floor of the barn everything is well arranged in regard to the feeding requirements, as a large part of the work is done here. The hay mow holds in all 100 tons of loose hay without crowding it. Large bins are provided at one end of the mow and there are also electric motors to run the feed cutters and the grinders. The feed for the horses is placed in the galvanized iron troughs in the stalls below by means of the feed spout which leads from the hay mow to the stalls. There is a hay chute to each stall, thus rendering it possible to place hay before each horse without the necessity of entering the stall. Bedding is also thrown down through the same chute.

The hay in the mow is piled up in the center leaving plenty of room along both sides to walk back and forth in order to readily get to the feed spout. An idea of the hay mow may be gathered from one of the pictures presented herewith, which represents an interior view under the rafters and at the same time clearly shows the framing in connection with the roof.

Value of Suspended Ceilings in Theatres

In discussing the above subject, J. M. Hessing, a lathing contractor in St. Louis, Mo., says:

"Suspended ceilings are a practical necessity in every theater because of their value in preventing unsatisfactory conditions of acoustics and ventilation, as well as from a structural viewpoint.

roof makes the room very uncomfortable during the summer because there is no means for ventilating the upper part of auditorium so as to remove this heated air.

"When suspended ceilings are used, the space between the ceiling and the roof forms a plenum chamber which may be utilized for ventilating the theater. This can be accomplished by placing registers in the ceiling when it is erected and installing an exhaust fan to draw the impure air from the plenum chamber so formed.

"The suspended ceiling is placed below the trusses and roof beams, thus doing away with the necessity for plastering the sides and soffits of these beams and trusses. The saving in the amount of plaster which would be required for this work will go a long way toward paying the cost of a suspended ceiling.

"When this type of construction is used, it will



View in Frame Barn for Horses Showing the Roof Construction

"If this type of ceiling is not used, the acoustics of the auditorium will be very poor because of the breaking up of sound by the large roof trusses or girders which project down into the room.

"If the under side of a roof constructed of solid material is finished as the ceiling of the room, moisture will collect on the ceiling and form into large drops. These drops will fall off, to the great annoyance of the audience. This 'sweating' will also ruin the decorations on the ceiling and, as it occurs constantly, will make it impossible to keep the decorations looking attractive.

"Without suspended ceilings the heat from the

not be necessary to fireproof the roof trusses or girders. This is another considerable saving which may be used to pay the cost of the suspended ceiling.

"When the suspended ceiling is used below a concrete roof, it is not necessary to apply a wash to the concrete. And if the roof be reinforced with a ribbed lath it will not be necessary to plaster the under side of the roof. These also are savings which may be used to cover a part of the cost for the suspended ceiling.

"It is poor judgment not to put in suspended ceilings when the theater is being built, for in nearly every instance they will have to be put in

after the building is completed. This will cost about twice as much as it would if they were erected at the time of building. In addition to this there is the loss due to closing down the house while the work is being done and the inconvenience and damage from dust and dirt occasioned by the work."

Laying Out the Building Site

In construction work the delivery of building material is too often made in a more or less haphazard way, and the material placed on the site in whatever spot comes handy. As a result, the site becomes a confusing and rather heterogeneous mass of lumber, brick, sand and whatever else is to be used during the work. Such a lack of system apparently saves time at the start, but almost invariably leads to delays and loss of money before the job ends. No successful building contractor starts a job to-day without carefully scheduling his building materials both as to time and place of delivery.



Picture of a Building Operation Showing the Distribution of the Materials, Offices, Tool Shed, Saw Mill, Etc.

He lays out his site on nearby ground, designating the exact locations for each and every size of lumber, for the brick, the stone, the sand, the cement and whatever is to go into the proposed structure. The accompanying reproduction of a picture of one of the Aberthaw Construction Co.'s jobs is the type of site layout that adds to the speed and smooth running of any job.

In the picture, the regularity with which all lumber piles have been placed is particularly evident. Each pile represents lumber for a certain definite job, and it is so piled that it can be obtained with the greatest ease and speed possible. In the foreground is one of the offices and in the left background is the company's field office. Behind that is the tool shed. The building under construction is just across the road at the left of the picture. In the sawmill in the background the lumber is cut up and piled as shown ready to be made into "forms."

As the lumber arrives on the job it is piled in the handiest position for carrying to the sawmill. The Aberthaw Company says that time spent in piling

the lumber properly is much more than made up by the convenience later on the job.

Another feature of the company's systematic methods of handling a construction job is the complete designing and laying out of all formwork in the office and the scheduling of the exact sizes and number of boards to be used in their construction. By so doing no time is lost in putting the work through the sawmill. Just enough lumber is sawed for taking care of all the "forms" desired.

Brick and Tile Production in 1916

Large increases in the value of brick and tile made in the United States in 1916 are reported to the United States Geological Survey, Department of the Interior. The total output amounted to \$159,042,849, an increase of \$33,248,005, or more than 26 per cent over the figures for 1915. The value of every variety of product classified by the Geological Survey except two was increased. Common brick, the output of which has been declining in recent years, showed a large increase in both quantity and value. There were 7,394,202,000 brick reported for 1916, valued at \$49,357,411, or \$6.68 per thousand, an increase in quantity of 543,103,000 brick and in value of \$7,212,119, or 17 per cent.

The front brick industry showed a considerable gain, its output being valued at \$11,464,614, an increase of \$1,929,078, or 20 per cent. Drintile and architectural terra cotta also showed large increases over 1915. Tile (not drain) valued at \$6,475,464—consisting of roofing tile (\$914,240), floor tile (\$1,438,231), ceramic mosaic tile (\$1,308,861), faience tile (\$814,077), and wall tile (\$2,000,055)—showed a gain of \$1,289,409, or 25 per cent.

Brick and tile products are classified naturally into three divisions, (1) structural materials, (2) engineering and refractory products, and (3) miscellaneous wares. Structural materials, including building brick of all kinds, terra cotta, fireproofing, and tile (not drain) was valued at \$84,643,252 in 1916, an increase of \$14,234,136, or 20 per cent over 1915.

Pennsylvania was the leading State in the production of brick and tile, reporting these wares to the value of \$29,630,563, or 19 per cent of the total, an increase of \$8,732,281 over 1915. Ohio ranked second, with products valued at \$25,506,344, or 16 per cent of the total, an increase of \$4,596,502. Illinois was third, with products valued at \$16,507,845, an increase of \$2,664,799 over 1915. New Jersey was fourth and New York fifth, with products valued at \$9,749,524, and \$8,410,340 respectively, both States showing large increases in value compared with 1915.

Investigations by the Forest Products Laboratory, at Madison, Wis., have resulted in the use of spent tanbark in the manufacture of asphalt shingles to the extent of 160 tons per week. The value of the bark has been thereby increased from 60 cents to \$2.50 per ton.



Fig. 1—Appearance of the Front of the Office, Showing the Typical Colonial Entrance

A Suburban Real Estate Office

Attractive Features of a Building Designed for Visitors on the Property

MUCH of the attractive architecture which beautifies the suburbs of New York City is located in Westchester County, which section takes care of part of the natural overflow of population from the near-by metropolis. Here development companies are active and many of the country districts of this county owe much of their building activity to these concerns.

In that section of New Rochelle known as Wykagyl Park many natural and historical advantages are to be found. As one approaches the main entrance to this section there is presented a vista of rolling hills sloping upward from the shimmering beauty of a placid lake from whose bosom a little stream

trickles down under a rustic bridge and past the old historic homestead of Tom Paine.

In this spot, in a small triangle formed by the crossing of two roads, is located the office of one of the companies referred to above. Its Colonial type of architecture seems particularly suited to the surroundings. Indeed, many of the residences in this locality are of the Colonial type, and harmonize most impressively one with the other.

The office is plain, yet well proportioned. As shown in one of the illustrations, a simple Colonial doorway leads into the main office of the building, an interior view of which, looking from the porch doorway, is given in one of the pictures.



Fig. 2—Interior of the Office, as Viewed from the Porch Doorway at the Left



Fig. 3—View from the Left Side

A massive stone fireplace is the most prominent feature of the room. The trim, as can be seen from a glance at the pictures, is simple and Colonial in its characteristics. Beyond through the open door can be seen a private office. The closed door at the left leads into a small toilet.

A detail of the porch at the left is shown in Fig. 3, which, together with Fig. 1, give an excellent idea of the roof line, which constitutes much of the beauty of the design.

The sides of the building are covered with white shingles, and the roof with shingles mottled green in tone. The familiar Colonial shutters with the

crescent-shaped saw cut therein form a conventional feature of the building. Flower boxes supported on brackets are placed beneath each window and add the finishing touch, which seems so appropriate to any building of Colonial design.

This office affords a most pleasant impression to the visitor who is desirous of inspecting the various properties, as he has the opportunity of looking over blueprints which are on hand or to discuss various features which he may be desirous of having incorporated in his home.

The building was erected by W. L. Hayes, 239 Huguenot Street, New Rochelle, N. Y.

Further Discussion of Roof Framing

Drafting Necessary in Some Cases Before Using the Steel Square in Framing Roofs

BY W. S. WILKIN



WHILE the subject of roof framing with the use of the steel square has been considered to more or less extent in the columns of the paper, there are some roofs which require drafting before we are able to use the square in framing them. We must have certain dimensions to use on the blade and tongue of the square before we can do the work to the best advantage. In Fig. 1 of the diagrams is represented what we

might find on the rear end of almost any storeroom—a square hip roof. Fig. 2 represents the front end of the roof on the same building which is out of square. We often find this where the streets do not run truly north and south or east and west. The roof shown in Fig. 1 can be framed with the steel square without doing any drafting, but the writer has made the drawing so that the reader will understand why certain figures on the steel square will give the cuts.

Finding Various Bevels

First draw the plate line $a-b-c-d$; then the center line of the ridge $e-f$ and extend it to j as shown. Draw the plan of the hips $b-e$ and $c-e$, also the plan of the common rafter $a-e$. Lay off the rise $e-f$ and draw $a-f$ which is the length of the common rafter. The bevel at a is the seat cut and at f the plumb cut. Now with a as center and $f-a$ as radius, turn over to h , then $a-h$ is also the length of the common rafter and the bevel at h is the side cut for all the jacks.

To get this bevel with the steel square take $a-b$

on the blade and $a-h$ on the tongue and the tongue will give the cut. To find the lengths of the jacks space them on the plate line as shown. Draw a line from these points to the line $b-h$ as shown at h' and h'' . This will give the length of each jack.

Now draw a line at right angles to the plan of the hip $b-e$ until it strikes the center line of the roof as $b-j$. Lay off the rise $e-g$ and draw $b-g$, which gives the plumb and seat cuts. Next with b as center and radius $b-g$ turn over to i and draw $j-i$. The bevel at i is the side cut of the hip or valley to

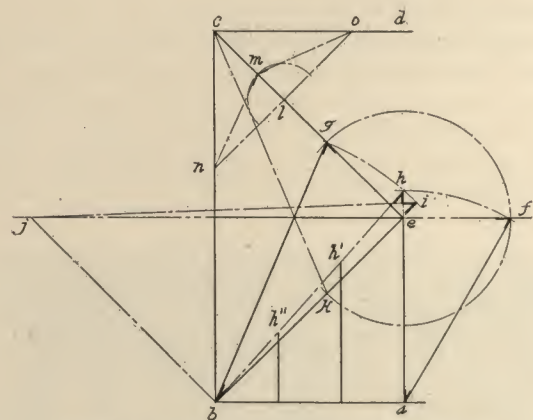


Fig. 1—Layout of a Square Hip Roof

fit against the ridge. To get this cut with the steel square take $b-j$ on the blade and $b-i$ on the tongue; the tongue will give the cut.

Some say this bevel is the same as the side cut of the jacks but in this I do not agree, for while the rise of the hip and common rafter are both the same, the run of the hip is the longer which makes

the bevel different. I have made Fig. 2 much larger than Fig. 1 owing to the number of lines involved. Referring to this diagram $a-b-c$ is the plate line; draw $f-j$ to represent the center line of the roof; bisect the angles b and c . This will give the plan line of the two hips as $c-e$ and $b-e$. There will be one long hip and one short hip. Now draw the line $a-d$ at right angles to the center line of the roof. Lay off the rise $e-f$ and draw $f-a$ and $f-d$, which will give the seat and plumb cuts of the common rafter just the same as in Fig. 1.

Now with e as center and $e-f$ as radius, draw the arc as shown, which will mark the rise of the hips

ing the lines at right angles to the hips until they cut the extended center line of the roof. Now draw $c-h$ and with c as center and $c-h$ as radius revolve to h' . Draw $j-h'$ and the bevel at h' is the side bevel for the hip.

All the jacks on the end of the roof in Fig. 1 are the same length and require the same bevels, etc., but in this end of the roof, Fig. 2, it will be seen they are different. I have marked them "A," "B," "C" and "D." As was the case in Fig. 1, we will use the common rafter to find the length, seat and plumb cut, also the side bevel for the jacks. The plate may be divided into equal spaces for as many jacks as wanted.

To find the length, bevels, etc., for the jacks in A, take a as center and $a-f$ as radius; revolve to s , draw $b-s$ and also a line from the plate line to s' . From the plate to s'' is the length of the jacks and the bevel at s is the side cut for them. The plumb and seat cuts are the same as for the common rafter.

To find the lengths, bevels, etc., of the jacks in "D" take d as center and $d-f$ as radius and revolve to r ; draw $c-r$, now from the plate line to r' and r'' will be the lengths of these jacks, which if spaced as here shown will be the same length as in "A" and the plumb and seat cuts will be the same as in connection with the common rafter $d-f$. The side cut is shown at r . It is different from the bevel shown at s owing to the difference in the hips.

To find the bevel of the jacks on the end of the building, we use the common rafter on the end, the plan of which is $o-e$ and the length $o-i$. All the bevels given are for the square edge of the rafter before the hip or valley has been backed or grooved and before the jacks on

the end of the roof have been beveled on the top edge.

First we must get a line at right angles to the plan $o-e$ owing to the fact that the plate is at right angles to the common rafter on the side of the roof and the lines $b-j$ and $c-j$ are at right angles to the hips. Draw $p-q$ passing through o , touching the long hip in the point p and the extended line of the short hip in q . The plumb and seat cuts of these jacks are the same as the bevels at o and i but to find the side bevel take o as center and $o-i$ as radius and revolve to the point $k-l$. Now draw lines from $k-l$ to p and q and the bevel at k is the side cut for the jacks in "B" and the bevel at l is the side cut for the jacks in "C." These lines, however, will not give the lengths of the jacks. To find them, draw lines from $k-l$ to b and c , then from the plate line to k' and k'' . This will give the lengths of the jacks in

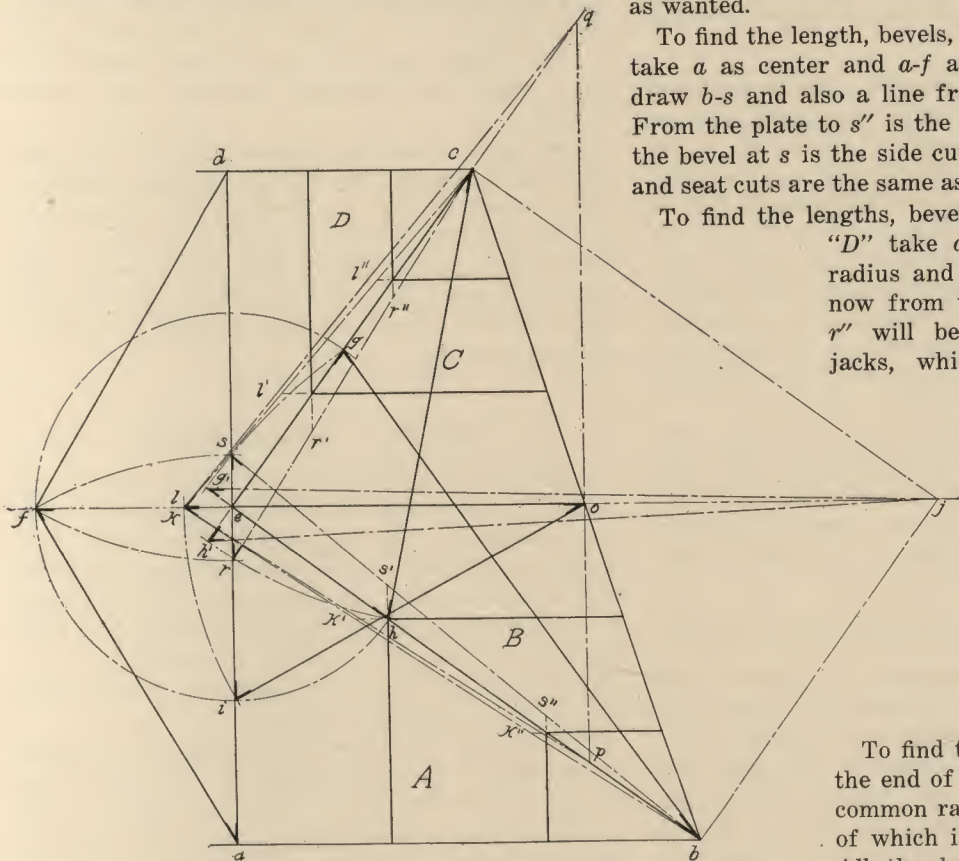


Fig. 2—Layout of front end of roof on same building as Fig 1 but which is "out of square"

and the common rafter on the end of the roof. Now draw $i-o$ and o gives the seat cut, while the bevel at i gives the plumb cut for this rafter, $o-i$ giving the length. Now draw $g-b$, which is the length of the long hip, and also give the seat and plumb cut for it. Draw $c-h$, which is the length of the short hip and gives the seat and plumb cut for it. The common rafter on this end of the roof is a little longer than on the other end of the roof or the other common rafters.

We now have the length, seat and plumb cuts for the common rafters and hips and we must next find the length and the side bevel for the jacks and hips. In order to obtain the side bevel for the hips proceed as in Fig. 1. With b as center and $b-g$ as radius, revolve to g' , then draw $j-g'$ and the bevel at g' is the side bevel of the long hip to fit against the ridge. The point at j is found as in Fig. 1 by draw-

"B." Draw from the plate line to l' and l'' , which will give the lengths of the jacks in "C." In this case the jacks in "B" and "C" are both the same length, but if there were three jacks in "B" so as to make the jacks in "A" closer together, the length would be different, but the bevels would still be the same.

From what is here presented, the writer feels that most anyone should be able to frame any ordinary roof with straight plates and straight rafters no matter what may be the angles of the building. The bevels, valleys and hips are both found the same way.

Finding the Bevel When Backing a Hip or Grooving a Valley

If it is ever necessary to back a hip or groove a valley, the bevel may be found in a short time no matter what may be the angle of the corner of the building if the method shown in Fig. 1 is followed. Draw the rise of the hip $c-k$, then draw a line at right angles to the plan line $c-e$ at any point on that line until it strikes the plate line on each side of the hip as $n-o$. Now with l as center and a radius just tangent to the line $c-k$ strike the arc as shown. Draw $m-o$ and $m-n$, which will be the bevel for backing the hip or grooving the valley, whichever the case may be.

If a roof has two different pitches, the plan line $c-e$ will run closer to one plate than the other and the bevel will be different on each side of the hip, but it is found in the same way. Always remember and make $n-o$ at right angles to the plan of the hip $c-e$.

One Thing to Remember When Framing with the Square

There is one thing to remember in framing with the steel square and that is you must always have a right triangle from which to get your figures, to use on the square, as in obtaining the seat and plumb cuts. The run and rise form a right angle and we take the run on either the blade or tongue and the rise on the other; the same way in getting the side bevels for hips, valleys and jacks.

It is often said that the run and length will give the side cut. The reader will doubtless think that run and length lack quite a bit of being a rightangle as shown at b of Fig. 1, where $b-e$ is the run and $b-g$ the length. The reason that the run and length will give the side cut for a square hip roof—and a square roof is the only kind that will do it—is because the run $b-e$ in Fig. 1 is the same length as $b-j$.

Cutting the Jack Rafters

In cutting the jacks for "A" in Fig. 2 length and run would not do it all because the run $a-e$ is not as long as the rightangle line $a-b$, so in getting the side cut for these jacks with the steel square, we must use the length $a-f$ or $a-s$, which is the same, and the length of the plate $a-b$. This will give the bevel at s . In getting the side cut for the long hip, length and run will not do for the run $b-e$ is not the same length as $b-j$, which is the rightangle line. Take the length $b-g$ or $b-g'$, which is the same on the

tongue and $b-j$ on the plate; the tongue will give the bevel at g' .

There are all kinds of framing squares, with so many figures on them that one can hardly remember which is which, and then they only give the cuts for the most common roofs. When the building mechanic runs up against something hard he is naturally confused, and does not know what to do. By this I do not mean to condemn the framing squares, for they are all right, but the mechanic should learn how to frame with the regular square first, and then he will know just why so and so give the cuts. The framing square will often help him then to do his work quicker, and if he runs up against something like that shown in Fig. 2 he will know how to go at it. In cutting Fig. 2 he can use the T-bevel or he can measure the lengths of the lines and use the steel square.

Suppose for example we are going to get the side cut for the long hip. Measure from b to g' and suppose it would be $6\frac{1}{2}$ in.; then measure from b to j and suppose that to be 5 in.; take $6\frac{1}{2}$ and 5 on the blade and tongue, or 13 and 10 would be better, then take 13 on the blade and 10 on the tongue, and the blade would give the bevel at g' , which would fit against the ridge.

The Best Time to Build

The subject indicated by the above title is one that is being much discussed at the present time and occupied a leading place at the recent Milwaukee convention of the National Association of Real Estate Boards. It came up for consideration at the conference on "Financing, Building and Selling Homes," and the following comments by O. E. Hawk, president of the Youngstown Real Estate Board, is of pertinent interest:

"The successful builder must handle the building in its entirety, namely, control his own plumbing, lumber, mill work, electric work, and must be able to finance the building until the buyer has paid in his last dollar. The great questions confronting the builder are four in number:

"1. Is the present a good time to build?

"2. Will general cost be cheaper next year?

"3. Should we provide now for continuous future operation?

"4. Are we fair and intelligent to the buyer when we say to him it will never be cheaper?

"The present is the best time, as we have at all times 200 houses under construction and all are sold far in advance of completion. We finish and sell a house every day in the year.

"As a lumber dealer, manufacturer and lumber producer I say it will never be cheaper, as lumber is scarcer and the hauls are continually getting longer. Enormous amounts of lumber are being shipped abroad and growth of new lumber cannot keep pace with demand.

"The labor question is a great factor at present. The best young men are going to the army. Next April will see a 10 per cent raise to all labor. A great era of prosperity is upon us.

Scale of Wages in the Building Trades

Official Figures Giving Rates of Wages in
20 Important Cities of the United States

IN view of the great increase during the past three years in the cost of practically all materials entering into building operations, it is interesting to note the rates of wages per tober, 1914, it is possible to observe the changes which have taken place since the European conflict began. Obviously most of these changes are in the direction of increases, some of which are

Rates of Wages, per Hour, Paid in Various Branches of the Building Trades

Name of City	Masons and Brick-layers	Structural Iron Setters	Plas-terers	Lathers	Plumb-ers	Steam Fitters	Carpen-ters	Painters	Sheet Metal Workers	Electrical Workers	Roofers	Cement Finish-ers	Laborers and Hod Carriers
Albany.....	70	62½	70	62½	62½	62½	56¼	56¼	60	56¼	60	40	L. 33½ H.C. 40
Buffalo.....	M. 55-60 B.L. 70	65 to 72½	65	60	62½	62½	57½	50	47½	50 to 62½	Comp. 30-42½ Slate 55	60	35
Boston.....	75	68¾	70	72½ Jan. 1, '18 75	68¾	68¾	65	67½	60	70	55	70	L. 40 H.C. 42½
Hartford.....	75	68¾	75	62½	62½	62½	62½	65	50	60	68¾	75	L. 37½ H.C. 43¾
New York.....	M. 62½ B.L. 75	68¾	75	68¾	75	75	68¾	62½	62½	65	Comp. 46½ Sl. & Tile 68¾	70	Lab. 37½ Plast. Lab. 43¾
Philadelphia.....	M. 60 B.L. 70	70	70	62½-70	56¼	56¼	60	45	56¼	40 to 56¼	56¼:50	50-55	Lab. 25 to 37½ H.C. 40-50
Washington.....	70	70	70	62½ \$2.50-3.00	56¼	62½	62½	56¼	56¼	62½	Metal 56¼ Slag 21½-43¾	50	Lab. 25-30 H.C. 35
Atlanta.....	M. 55 B.L. 60	45-62½	55	37½	62½	56¼	50	37½	45	56¼	31¼	43¾	20
Minneapolis.....	M. 70 B.L. 75	68¾	75	50	68¾	68¾	55	55	50	56¼	50	50	30
Omaha.....	75	68¾	75	65	75	75	57½	57½	55	60	Grav. 40 to 50 Tile 55-60	62½	Lab. 35-40 H.C. 40
Chicago.....	75	70	75	71½	75	75	70	72½	68¾	75	67½	72½	45
Cincinnati.....	M. 65 B.L. 75	65	75	62½	65½	62½	62½	55	50	62½	40-45-50	55	Lab. 25-30 H.C. 42½
St. Louis.....	M. 70 B.L. 85	70	81¼ Jan. 1, '18 87½	75	75	75	70	62½	62½	75	60	62½	Lab. 40-50 H.C. 55
Memphis.....	82½	62½-65½	75	Wood 50 Metal 62½	62½	75	55	55-60	53½ up	56¼	22½ to 45	50	Lab. 17½ H.C. 30-37½
New Orleans.....	62½	62½	62½	35 to 50	56¼	56¼	40-45	37½-40	40 to 45	50	25-30	30-35	Lab. 15 H.C. 28-30
San Antonio, Tex..	M. 62½ B.L. 87½	56¼ to 75	75	62½	75	75	62½	50	50	56¼	50	62½	L. 18½ to 25 H.C. 25
Denver.....	M. 75 B.L. 87½	75	87½	62½	75	75	70 Oct. 1st, 75	62½	62½	62½	62½	75	Lab. 28½-40½ H.C. 43¾-50
Seattle.....	87½	62½-75	87½	62½-75	81¼	81¼	70	65	68¾	75	60	68¾	50
Portland, Ore.....	75	62½	75-87½	75	75	75	56¼	50	68¾	56¼	50	62½	L. 37½ H.C. 50
San Francisco.....	87½	75	87½	75	81¼	81¼	68¾	68¾	75	75	Slate tile 62½ Compos. 75	75	Lab. 37½ Hod carriers: 56¼ Brick 56¼ Plast. 62½

hour paid at the present time in some of the more important branches of the building trades. By comparing the figures in the table here presented with those given in the issue of the paper for Oc-

quite marked. In a few cities, however, there are branches of the trade in which no change has been made in the rate of wages, as for example in Chicago there are seven branches in which the

figures of wages are the same as in July, 1914.

The figures covering the twenty cities which we present in the accompanying table are taken from an official compilation of seventy cities in the United States and Canada by E. M. Craig, secretary of the Builders' Association, 808 Chamber of Commerce Building, Chicago, Ill. The figures are revised up to July 1 of the present year.

Of the seventy cities in the official schedule sixty-five are in the United States and five in Canada, the latter being Edmonton, Montreal, Toronto, Vancouver and Winnipeg.

In selecting the twenty cities mentioned in the table we have taken a few along the Atlantic seaboard, a second group extending from north to south through the central portion of the country, while a third group embraces some of the extreme western points ranging from Denver and Salt Lake City to the Pacific Coast.

Trades Operate on Hourly Basis

It will be seen from an inspection of the table that the trades operate under an hourly scale with the exception of the city of Washington, where the lathers are paid by both methods, that is, by the hour or by a stated sum per day.

In addition to the information given in the table, it may be interesting to state that in Philadelphia laborers work eight, nine and ten hours a day; in Salt Lake City the roofers work nine hours and the same is true of roofers and laborers in St. Paul. In Memphis most of the work is done by the "open shop" plan. The roofers and laborers work ten hours a day and the marble cutters and pipe-covering workers, nine hours. In Boston, terrazzo, mosaic-workers and composition floor men receive 70 cents per hour. In Chicago, slate roofers receive 72½ cents per hour.

In Cleveland, plasterers will receive 75 cents per hour on the first of January, 1918, cement finishers' helpers 45 cents and sheet-metal men 70 cents on Oct. 1, and electricians 78½ cents on Nov. 1 of the present year. In Providence, R. I., plasterers work forty hours a week.

The Chinese Apartment House

Some very interesting particulars regarding the apartment house as it exists in China were given out a short time ago by Thomas W. Clarke, a construction engineer recently returned from China. Referring to a photograph which he had, he stated that the apartment house shown was more than 400 years old and housed about 400 families.

"It is the chief building of a village in the southern end of the Fu-Ken Province, South China, about 300 miles from Hong Kong. Built in a perfect circle, it is five stories high and is massively constructed of stone and brick. Its design shows that it was built as much for protection as for dwelling purposes. There are no windows on the outside, and enemies would have to scale the walls before they could harm those within. There is only one entrance, a very strong gate, capable of standing siege

for a long time unless attacked with modern weapons. Undoubtedly the house was built to withstand the pirates and roving bands of robbers that terrorized Fu-Ken Province in the old days.

"The outside wall is about 50 ft. high and about 550 ft. in diameter. The interior court is 400 ft. across, paved with great stone blocks. Right in the center of the yard is the communal water supply, a large cistern which is fed by the water from the roof running through terra-cotta drains.

"There are no modern conveniences, and the various tenants reach their dwellings by way of bamboo ladders.

"The apartments are 12 ft. wide, and the floors are made of rough-hewn lumber laid over poles of Chinese fir.

"The roof is made of heavy terra-cotta tiles laid so that the edges overlap, and it is weatherproof. Furthermore, the tiles afford perfect shelter from the sun, which is hot in South China, and the top-floor apartments are as cool as those lower down. The whole structure is weatherproof.

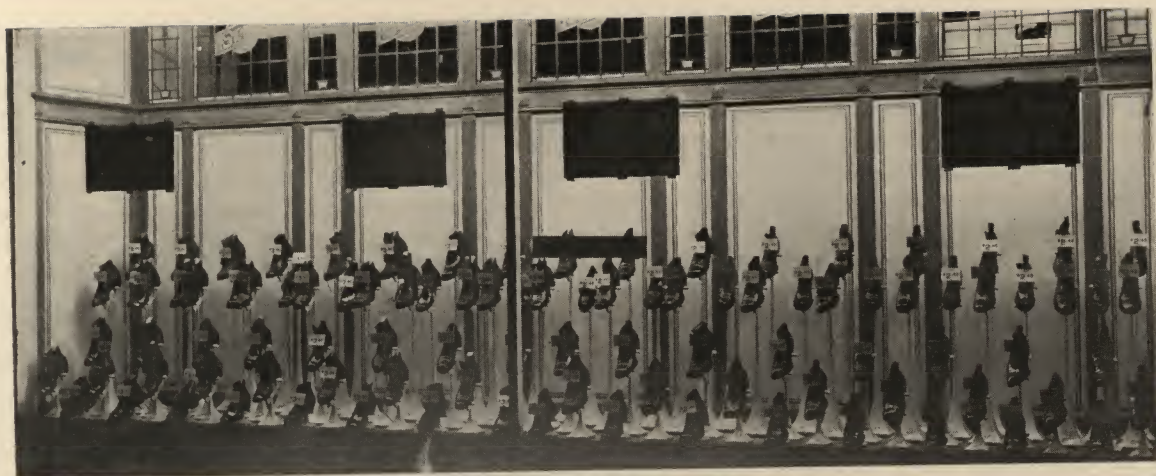
"Every apartment has its own veranda. These run around the whole interior of the house and face on the courtyard, which often serves as a market place when merchants are allowed to come in from near-by villages. The courtyard is also the meeting place of all the residents of the apartment house, and there everything of interest to the community is discussed.

"The four hundred families include considerably more than 1000 persons, and they have a government of their own. It is not unlike the much advertised form of commission government adopted in some of the towns and cities in this country.

Cement Industry for Six Months

The first half of 1917 has been a period of great activity in the Portland cement industry. Production and shipments from practically all mills have considerably exceeded those for the corresponding period of 1916, according to E. F. Burckard of the United States Geological Survey, Department of the Interior, and prices are now higher than they have been for 19 years. The present strong demand for cement is reported to come principally from small consumers, many of whom are in agricultural districts, although much cement is going into roads and pavements.

Whether or not the output for 1917 will break the previous high record—that of 1913—cannot now be predicted. The month of June has shown a slight abatement of demand from small consumers in certain districts, attributable in part to the entry of the United States into the war, to the prospect of increased taxation, and to the purchase of Liberty bonds. General building and improvement work is likely to be curtailed or postponed at times of high prices and uncertain deliveries. It is possible that there may be increased demand for cement for military uses, but any increased demand is likely to be local rather than general.



ATTRACTIVE SHOW-WINDOW BACKGROUNDS CAN BE MADE WITH WALL-BOARD

Utilizing Wall Board in the Store

A Few Practical Suggestions of Value
to the Carpenter and the Builder

BY JOSEPH A. POESL

MANY varied and appropriate uses for wall board are to be found in every kind of store. Nevertheless, there are carpenters and builders who seem to have the impression that

in many stores of every description, and fulfilling the purpose of its existence under different guises.

Evidently the show window is where it was first used in the store. Here it has enjoyed a



Interior of a Fine Looking Hardware Store Which Is Finished with Wall Board

its field of usefulness lies solely within the narrow confines of the home or residence. Of course this is far from the actual fact, for it can be seen

large demand ever since the early days of the wall-board industry. To the numerous needs of the show window which it fills must be attributed

this success. It is utilized not only for backgrounds, partitions and the like, but also for display forms and other accessories of window trim.

But the real reasons for its popularity are due to its more or less well-known qualities of cleanliness and ease of handling. Another factor is that it takes decoration nicely, either in water or oil paints. When a storekeeper considers the use of wall board for his windows he can feel assured that his merchandise will not be soiled or damaged by it as a result.

Making a Permanent Window Background

A permanent window background of wall board is made by nailing it to a framework constructed of 2 by 2 in. studs. The important point to look after here is the rigidity of the framing, which is often brought about by placing a dressed 2 by 4 flatwise on the top to form the finishing cap as well as the header. In order that the reverse side may present a pleasing appearance also, it is advisable to use dressed lumber only. Special care should be exercised in spacing the studs symmetrically to permit the reverse side to be decorated to harmonize with that of the store proper. These remarks are made with the presumption that the wall board is applied to but one side of the studs—the customary method—otherwise there would be no object in using dressed lumber for the concealed parts.

The Frame Work

A comparatively late but already common practice in the erection of show window backgrounds is to make the framework permanent with the panels of wall board removable. The way this is done is with rabbeted stiles and rails instead of regular decorative strips, much after the manner of constructing doors. These stiles and rails also do away with the studs. Therefore, one of the finer woods is selected, and no stile or rail made less than $\frac{7}{8}$ by $2\frac{3}{4}$ in. in size after being dressed. As in the ordinary construction, a heavier member is placed on the top to insure rigidity. When the framing is completed panels of wall board are inserted in the openings and held in place securely by small appropriate moldings.

Why Such a Window Background Is Desirable

Such a window background as just described is particularly desirable by storekeepers that change their windows according to the season, the day or the weather. It enables them to make rapid and frequent changes of the panels, each practically resulting in a new and different background. Of course the frequency of these changes depends entirely upon the number of complete sets of similarly decorated panels they have on hand. These panels, by the way, are always decorated on both sides, as, obviously, they are exposed on the back to the inside of the store.

When it is desired to divide show windows into two or more parts, portable partitions are employed for the purpose. Sometimes these are

simply low and small devices, but they are also seen in the form of folding screens. The former are small frames, very much like picture frames, having wooden legs fastened to the bottom to keep them in an upright position. The screens are constructed of rabbeted vertical pieces and cross-pieces with removable panels, each screen generally consisting of three narrow and tall frames held together with double-acting hinges.

Rooms Built of Wall Board in the Show Window

In the cities and larger towns progressive furniture dealers build rooms finished with wall board right in their show windows for the display of furniture in surroundings as much like those in the average home as possible. Undoubtedly those features of wall board, cleanliness and ease of handling, here, again, played an important part in influencing these merchants in their choice.

The construction of display rooms, in show windows or stores, and demonstration rooms for phonographs is the same in each case. The studing consists of either 2 by 3's or 2 by 4's, and the ceiling joists of 2 by 6's when there is no load to carry. It is very essential that all this rough lumber be sized. Thereby straight and plumb wall surfaces and level ceiling surfaces are readily obtained. Wall board is put on both the inside and outside of the partitions, but only on the bottom side of the joists. The application and decoration are no different from those followed in regular wall board work.

Some Interesting Examples

One of the photographic illustrations accompanying this article is evidence of the expense a merchant will incur in order to display his wares to the very best advantage. It shows a display room within a large furniture store. There can be no question but that it is a fine-looking room, and it indicates pretty well what can be done with wall board. It will be noted that the decorative strips and other trim in the room match and harmonize with the furniture and mantel in display. While it is not definitely known that this trim is not permanently fixed to the walls, very likely it can be quickly removed and replaced by other trim of different styles to go with other styles of furniture. In this event, no doubt, round-headed brass screws are used to hold it in place. The scheme of having removable trim is more common than one would suppose. In that way a merchant makes his show rooms bring him a maximum return for his investment.

Using Wall Board for Booths

It has already been casually mentioned that phonograph demonstration rooms or booths are being treated with wall board. Mainly, this is because of its favorable acoustic qualities. However, the fact that it also permits of pleasing decoration is another point in its favor, for it is almost as important that these rooms be attractive as well as soundproof.

To produce extremely sound tight phonograph demonstration rooms three thicknesses of wall board are put in the walls or partitions. One is placed on the outside, one in the middle and another on the inside. Instead of using solid 2 by 4 studs, two 2 by 2's are substituted for each one of them; plainly this is necessary to get the one thickness in the middle. The procedure is this: first a series of 2 by 2 studs is erected, care being taken to place a full 2 by 4 at the top and bottom for the header and shoe respectively. The wall board is now applied to both sides of the 2 by 2's. Then another series of 2 by 2's is erected, each stud being nailed directly to one of the first put up. On the outside of this last series another thickness of wall board is applied. The rest is the

ished with wall board is shown in another of the illustrations. The clever treatment of the columns and the beams is a feature worthy of special notice. Also of interest is the harmonious panel arrangement. By alternating with a circular and square shaped panel on the ceiling, monotony has been avoided.

The uses of wall board in the store that have been enumerated do not by any means cover them all. They have been mentioned to give the carpenter and builder a glimpse of the possibilities for profitable work in this particular field opened to them by wall board. It surely ought to make a fertile field for work in the winter, or at other times when things are moving slow in the building world.



A Furniture Display Room in a Store Where Wall Board Has Been Used with Good Effect

same as in regular work. The board in between need not be decorated in any way.

Wall board can be nailed to light wooden frames to make such show window accessories as box columns and rectangular and cylindrical display forms. Decorative strips of wood are not needed when this is done. The whole form may be covered with a plain wall paper to suit the purpose in mind. Ordinary paper-hanger's paste will hold the wall paper to the wall board. In bending wall board to cylindrical shapes one end should first be secured to the round frame of wood and the board gradually and slowly bent to the required shape.

An example of an unusually attractive store fin-

"The Seasoning of Wood" is the title of Bulletin No. 552 which has just been sent out by the United States Department of Agriculture. The matter has been prepared by Harold S. Betts in charge of the office of Industrial Investigation and an idea of the scope of the bulletin may be gathered from the table of contents. Attention is first given to the importance of proper seasoning methods and an enumeration and explanation of the many ways in which wood may be injured in seasoning. Reference is made to air seasoning, also to kiln-drying, the types of kilns, the preliminary treatment, and the process of drying. Not the least interesting and valuable of the contents are the rules for piling lumber.



Glimpse of a Few of the Barracks Under Construction Near Louisville. In Front of the Cornfield and at the Extreme Right Is Seen the Path of the Temporary Water Main

Building War Cities for the Army

Details of a Gigantic Undertaking Which
Will Appeal to the Practical Builder

IT has been said that a very appreciable percentage of the new building construction work now in progress is not embraced in the published reports of operations as represented by the figures given out by the building departments of the various cities of the country and that the latter are not therefore a true index of existing conditions in the building world. This is undoubtedly true to a large extent owing to the fact that an immense amount of construction work is being done outside city limits to meet the requirements of the United States Government in the way of numerous

camps for the great army that is being organized to assist our European allies in the unparalleled struggle for democracy and for the permanent and lasting peace of the world.

Much of this work is embraced in the construction of the sixteen camps or cantonments located at different points throughout the country, there being one each in the States of Massachusetts, New York, New Jersey, Maryland, Virginia, South Carolina, Georgia, Kentucky, Ohio, Michigan, Illinois, Arkansas, Iowa, Kansas, Texas and Washington. Each cantonment comprises from 1200 to 1500 unpainted



A Nearer View Showing More in Detail Some of the Work Under Construction at the Cantonment Near Louisville



View of Section No. 1 Showing Administration Building Used During the Work of Construction as Headquarters for the Contractors and Army Officers Engaged in Building the Cantonment at Louisville

frame structures of the simplest possible character.

The barracks for the men are two-story buildings, 43 ft. wide and of different lengths, depending upon the number of men to be accommodated. The floor plan, which is presented in connection herewith, is that of a building 71 ft. long, and at one end is a single-story kitchen with a pantry and a sleeping room for the cooks. A long counter separates the kitchen from the mess hall, where all of the men living in the barracks will eat. In the center of the first floor is a company hall, with doors leading outside at each end of the structure and a stairway to the floor above. This company hall separates the mess hall from the two first-floor dormitories. The first story is 9 ft. in the clear. On the second floor are four dormitories arranged similar to those on the first floor. The dormitories are separated by partitions so that the men in each are comparatively isolated from the others, which is considered desirable by the Army and Medical Department.

There is a ventilating opening running the length of the ridge of the building to which vertical vent ducts extend from the floor below. Each building

has a large amount of window area and the sash can be slid into a pocket to one side to secure ventilation. The lavatories for both officers and men are small detached buildings, the details of a typical lavatory for a comparatively small number of men being presented on another page of this article.

The officers' barracks vary considerably in size and shape. Some are long single-story buildings with a kitchen at one end, adjoining which is a mess room, and then a long hall down the center with rooms measuring 10 ft. 6 in. x 8 ft. 4 in. opening from it on either side and an office at the further end. Other barracks are small single-story buildings with a kitchen, mess room and two to four individual rooms, the largest about 10 ft. square. Other buildings are two stories high with larger rooms shared by two officers; also an office, mess room and kitchen. A few of the officers' barracks have no kitchen and mess room.

An idea of the construction of the two-story barracks may be obtained from the details which are presented herewith. The framework consists of 2 x 8 in. first floor joists placed 2 ft. on centers; 2 x 4 in. studs; 2 x 4 in. knee braces placed 10 ft.

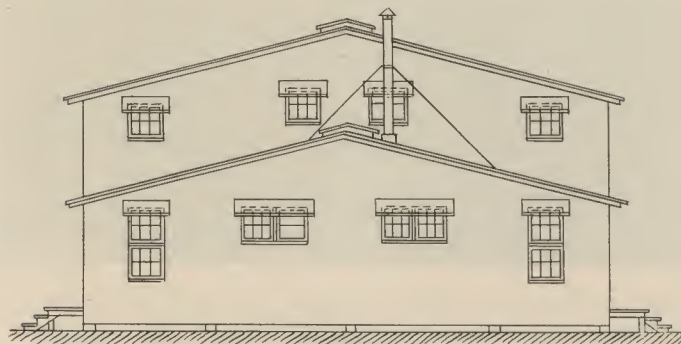


Some of the Buildings Under Construction Just Off the Driveway Leading to the City of Louisville

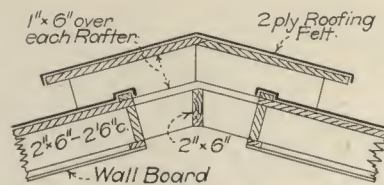
on centers; 2 x 6 in. ledger boards and 2 x 6 in. rafters placed 2 ft. 6 in. on centers. The outside walls are covered with one-ply roofing felt, over which in turn is placed novelty siding.

The rafters are covered with $\frac{7}{8}$ in. sheathing board over which is placed a two-ply roofing felt.

they are lapped 4 in. The inside posts are 4 x 4 in. and the braces used are 2 x 4 in. Building paper is placed between all double floors and the joists are doubled under end walls and cross partitions. The center of all spans is bridged with 2 x 8 in. pieces cut in between the joists.

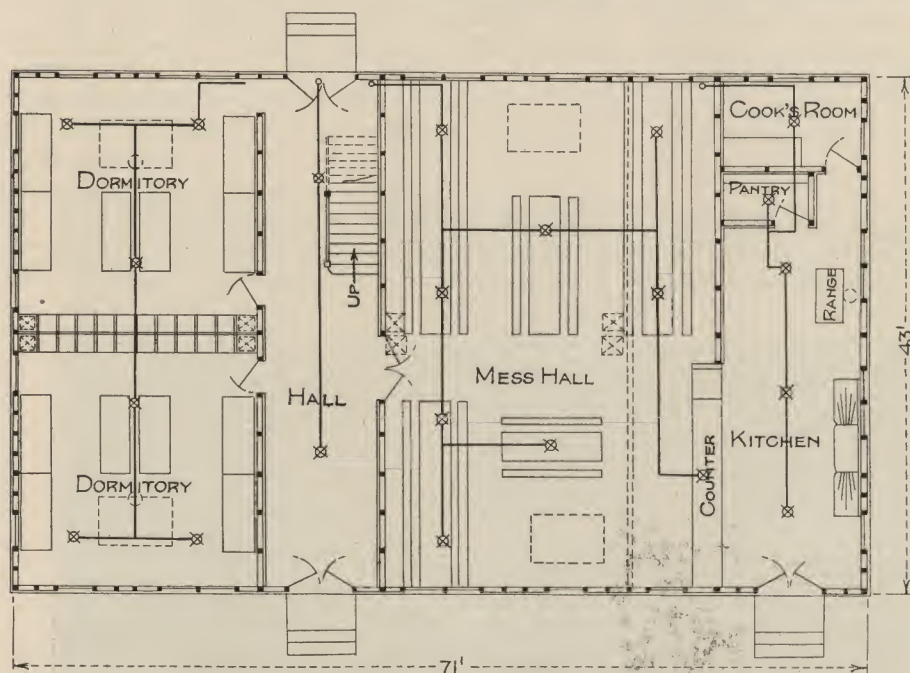


End Elevation of Two-Story Barracks—Scale 1/16 in. to the foot



Cross Section of Vent Ridge—Scale $\frac{3}{8}$ in. to the Foot

Front Elevation of
Two - Story Bar-
racks With One-
Story Kitchen Ex-
tension Shown at
the Right — Scale
1/16 in. to the Foot



A Typical Floor
Plan of One of the
Two-Story Build-
ings for the Men—
The Position of the
Mess Hall, Dormi-
tories and Kitchen
Are Clearly Indi-
cated—Scale 1/16
in. to the Foot

Typical Plan, Elevations and Detail of a Barracks Building at the Army Cantonments

The underside of the rafters is furred and covered with wallboard except in the kitchen.

The girders are made up of two pieces of 2 x 8 in. timber, and where the floor joists rest upon them

The inside finish of the rooms consists of dressed boards put on horizontally and covering the space from the floor to the sill of the upper sash, above which wallboard is used.

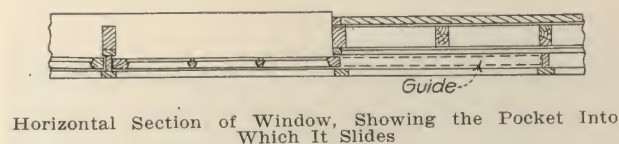
All outside doors are 2 ft. 8 in. x 6 ft. 8 in. and are $1\frac{3}{8}$ in. thick.

The buildings rest on 6 x 6 square wooden posts or 6 in. or 8 in. round wooden posts, as may be most convenient.

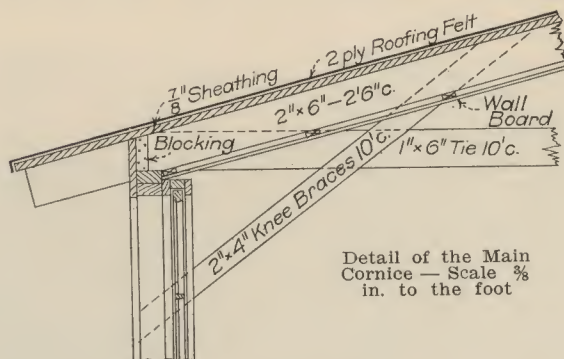
In the way of plumbing fixtures the details pre-

brass plugs, beehive strainer, gaskets, etc. The urinal troughs are of the same material, the troughs being approximately 6 ft. long.

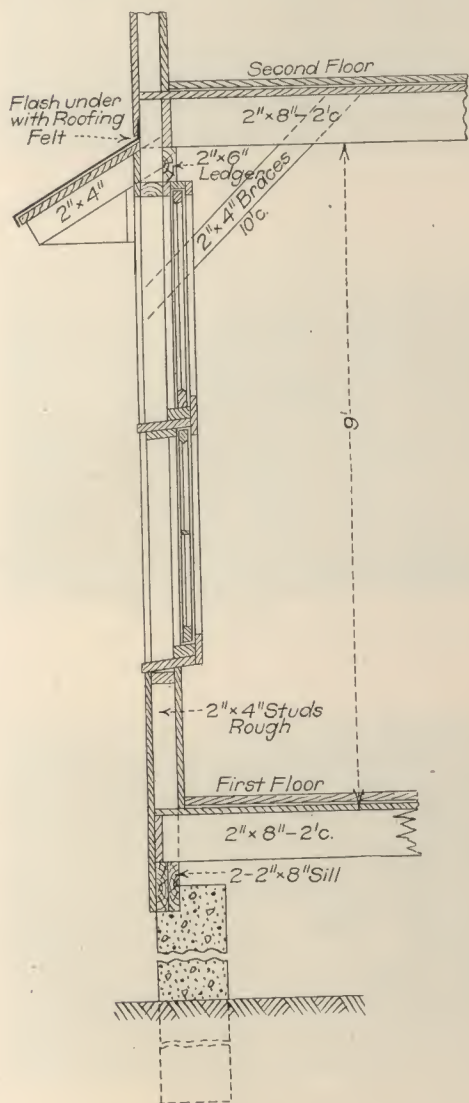
The shower outfit consists of a 4 in. rough cast



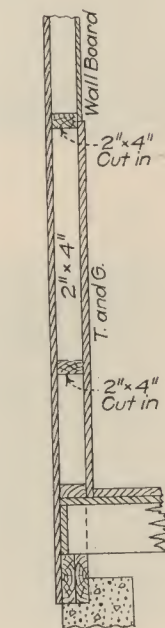
Horizontal Section of Window, Showing the Pocket Into Which It Slides



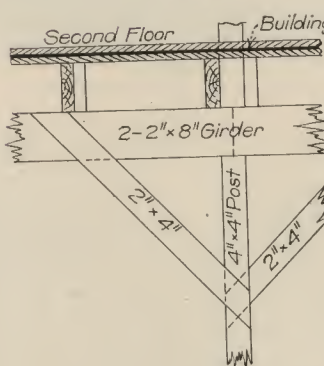
Detail of the Main Cornice—Scale $\frac{3}{8}$ in. to the foot



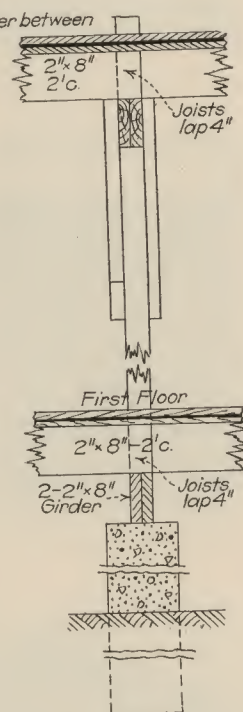
Vertical Section of Main Wall Taken Through the Windows and Cornice



Detail of Outside Wall Taken on a Vertical Line Between the Windows



Detail of the Outside Doors—Scale $\frac{3}{8}$ in. to the foot



Various Details of Inside Posts—Scale $\frac{3}{8}$ in. to the foot

Miscellaneous Constructive Details of a Two Story Barracks Building

sented on another page afford a very comprehensive idea. The lavatory troughs are No. 26 gage galvanized iron, and in order to obtain the proper fall the 1 x 3 in. support is graded at the back $\frac{1}{8}$ in. to the foot. These troughs are of various lengths and are provided with the necessary wastes with

brass shower head with removable face and two rough brass compression angle valves. Hot and cold water is supplied by a Domestic Tank Heater.

The water closet outfit consists of vitreous siphon washdown bowl and hardwood seat without cover, finished with one coat and shellac and two coats of

of ground covered by the main cantonment is 9000 acres, or approximately 14 sq. miles. Running through the center will be the parade ground 1000 ft. wide.

Here the company barracks range all the way from 20 x 35 ft. in plan to 43 x 140 ft. while the

200-men barracks was erected within one work-day of ten hours. Engineers entered the field and located the site early in the morning, after which carpenters erected batter boards and lines. Laborers then appeared with shovels and dug the foundation post holes. They were followed by the carpen-



No. 1—Digging the Holes for the Foundation Posts



No. 2—Cutting Off the Foundation Posts



No. 3—Setting the Sills and Girders



No. 4—Setting the First Floor Posts and Second Floor Girders



No. 5—Setting the Second Floor Joists



No. 6—Enclosing the Frame with Felt and Siding

Pictures Showing Different Stages of Work on a 200-Men Barracks Building at Camp Dix, Wrightstown, N. J., and Completed in Ten Hours

officers' quarters range from 20 x 21 ft. in size to 20 x 122½ ft.

In the progress pictures presented on this page we show the operations in the construction of a barracks building at this camp or cantonment. An idea of the rapidity with which the work was accomplished may be gleaned from the fact that a

ters who set the posts and cut them off at the proper elevation. Girders and sills were then placed on the posts, after which the joists for the first floor were unloaded in the proper position directly from the wagon. While the joists were being set, the framing for the side and end walls was unloaded and put together ready to be raised, each side a

completed unit. All framing was cut at the framing yards, delivered ready to erect without additional fittings as is customary in steel buildings. After this operation was finished, the second floor joists were delivered and placed in position, and carpenters began covering the exterior walls with siding, which had previously been cut to fit.

The floor was laid at the second story and columns erected carrying purlins and ridge poles while the work of siding was in progress. The rafters were set and the roofs completed by the time the siding reached the eaves.

The necessary number of ventilators were made up in units at the yard and set in place before being covered with paper. Hoods for the windows were finished complete with paper before erection.

The Heating Systems to Be Used

The heating of the men's barracks and all lavatories will be with pipeless furnaces or cannon stoves. All officers' quarters, medical buildings, generals' residence and headquarters, administrative and telephone buildings and bakery will be heated by separate gravity return steam systems built in a projection from the buildings. Radiation will be direct-column cast-iron hung on the walls. Every building is to be electrically lighted.

At the cantonment near Louisville, various views of which are presented herewith, one of the Administration buildings is said to have been built partly of lumber cut from a Mississippi pine forest less than a week before. The trees were felled and went through the mills Saturday, were kiln dried Sunday, loaded Monday on special cars commandeered by the Government, rushed to Louisville at almost passenger schedule time, and when the carpenters at Camp Taylor—the name of the cantonment—laid down their tools at the end of work the following Saturday, men were moving desks and other office paraphernalia into a house which had been part of the forest six days previously.

Amount of Southern Pine Used

At the Louisville cantonment, which is now practically completed, from 50 to 70 carloads of Southern yellow pine were consumed daily in the building operation. The major portion of this lumber was furnished the Government under a special arrangement made with the Southern Pine Emergency Bureau—a war organization with operating headquarters in New Orleans which represents the entire yellow pine industry as distributing agency in handling Government business. Through the efforts of the bureau, the Government was enabled to obtain in quick time and at reasonable prices much of the lumber now being used in cantonment construction at various points in the country. The bureau by means of stock sheets showing lumber on hand at various mills in many parts of the South was able to place orders nearest the points of destination, thus insuring prompt deliveries and short hauls with a minimum of freight charges.

In the case of the Louisville cantonment, for instance, most of the order was given to Alabama, Mississippi and Florida mills. When the Little

Rock, Ark., cantonment order was filled, it was placed with the Arkansas mills. Other cantonments provided for by the bureau include those in Ohio, Iowa, Texas and Kansas. Through this co-operative work of the mobilized resources of the Southern pine industry, it was possible for the War Department, in spite of the great demands made on the lumber trade, to be assured of an adequate supply of properly graded and standardized materials and thus greatly facilitated the construction of the sixteen war cities as well as the general barracks camps elsewhere.

The cantonments are laid out in groups of buildings each called a unit or section, the general design having been prepared by Harlan P. Kelsey of "City Beautiful" fame, who is one of the experts called on by the War Department to aid the Government in the present emergency. Provision is being made at each cantonment to take care of anywhere between 35,000 and 40,000 troops.

Each cantonment will be virtually a city in itself, with streets, blocks, stores, electric lights, railroad yards, water lines, garbage incinerators, etc., in addition to the hundreds of buildings required. It is stated that each cantonment will require about 4000 carloads of material, assuming that all of it must be brought to the site by rail.

The following is a list of the cantonments with the designated division, location and contractors:

FIRST DIVISION—Ayer, Mass. General contractors, Fred T. Loy & Company, Springfield, Mass.

SECOND DIVISION—Yaphank, L. I. General contractor, Thompson Starrett Company, 51 Wall Street, New York.

THIRD DIVISION—Wrightstown, N. J. General contractor, Irwin & Leighton, Philadelphia, Pa. Will install all mechanical systems with own forces.

FOURTH DIVISION—Annapolis Junction, Md. General contractor, Smith, Hanson & MacIsaac, 18 East Forty-first Street, New York.

FIFTH DIVISION—Petersburg, Va. General contractor, Rhinehart & Dennis Company, Charlottesville, Va. Sub-contracts to W. H. Harrison & Co. & Thomas.

SIXTH DIVISION—Columbia, S. C. General contractor, Hardaway Construction Company, Columbus, Ga.

SEVENTH DIVISION—Atlanta, Ga. General contractor, Arthur W. Tufts Company, Atlanta, Ga. Subcontracts to Farrell Heating & Plumbing Company and sheet metal to Dowman-Dozier Mfg. Company, Atlanta.

EIGHTH DIVISION—Chillicothe, Ohio. General contractor, A. Bentley & Sons Company.

NINTH DIVISION—Louisville, Ky. General contractor, Mason & Hanger, Richmond, Ky.

TENTH DIVISION—Battle Creek, Mich. General contractor, Porter Brothers, Detroit, Mich.

ELEVENTH DIVISION—Rockford, Ill. General contractor, Bates & Rodgers Construction Company, Chicago, Ill.

TWELFTH DIVISION—Little Rock, Ark. General contractor, James Stewart & Company, New York and St. Louis. Handling all work direct.

THIRTEENTH DIVISION—Des Moines, Iowa. General contractor, Weiz's Sons, Des Moines, Iowa.

FOURTEENTH DIVISION—Fort Riley, Kan. General contractor, George A. Fuller Company, New York, N. Y.

FIFTEENTH DIVISION—Fort Sam Houston, Tex. General contractor, Stone & Webster, Boston, Mass. Not subletting any of the work.

SIXTEENTH DIVISION—American Lake, Wash. Contractor, Hurley Mason & Company, Tacoma, Wash.

Some Echoes of the Noon Hour—II

Further Discussion by the Carpenter-Foreman and His Men—Building Fences

BY EDWARD H. CRUSSELL

“WHAT I can’t understand,” said Bliss, as he snapped a rubber band round his folded lunch box, “is what you’ve all been doing since I’ve been gone. Haven’t any of you been sick have you? Just shows what a difference a good man makes in a gang; here I’ve been away best part of a week and I’ll bet I could eat all you’ve done since I’ve been gone.”

“I’ll bet he could too,” said the kid. “Did you see what he put away for lunch? No wonder there’s talk of a food shortage.”

Bliss looked around for something to throw at the speaker, and not finding anything handy, decided to treat the remark with the contempt it deserved.

“What have you been doing all this time you’ve been away?” asked “Old George.” “I know it must have been something important, otherwise the boss never would have sanctioned the idea of breaking up the gang by taking your valuable presence out of it.”



Fig. 4—The Foreman’s Fence

George said this just as if he and the others didn’t know that the “important work” had been the building of a back fence, and a general laugh was the consequence; followed by a one-sided argu-

ment as to whether the boss had taken the only man he could trust, or the man who could most easily be spared.

“Anyway,” said Bliss, “it was a position of trust,

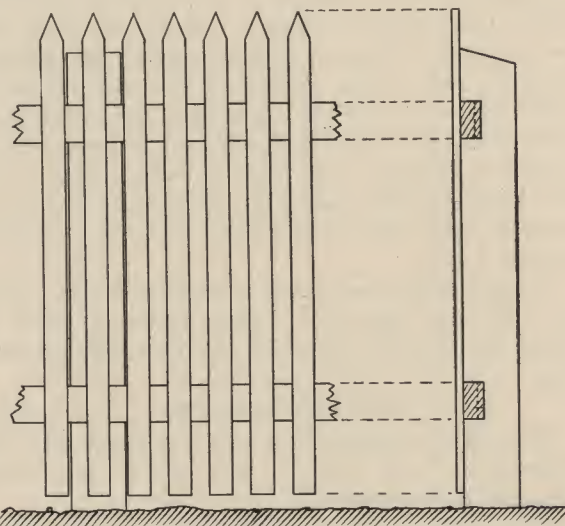


Fig. 5—Detail of Scotty’s Picket Fence. Posts Are 8 Ft. on Centers and the Pickets 2 In. Apart

and I had one man under me—the fellow who dug the post holes. I know what a foreman’s worries are now, and I don’t wonder they are all either gray-haired or bald-headed. This duck that I’m speaking of added years to my age. He had contracted with the boss to do the digging at twenty-five cents a hole. They were to be 4 ft. deep and his method of measurement was to stick the rod over in one corner of the hole at the bottom, let it lay over to the other diagonal corner at the top, and then say, ‘Four f’it good enough.’ He used a pick and shovel for the digging, and I had to bring him back an average of three times for every hole. Each time he’d splutter and cuss in garlic till all was blue.”

“Garlic?” queried Scotty, “you mean Gaelic, don’t you?”

“Do I?” was the reply, “I don’t know. I thought it was garlic. I’m not very well posted on these foreign perfumes.”

“My mistake,” acknowledged Scotty with a grin, “go on with the plea for the defense.”

“Well,” continued Bliss, “this fellow was not so foolish as he might have been. Because of his equipment, he had to dig his holes somewhat in the

form of a trench and in two or three places where the posts came close together, like for instance in the gateways, he took advantage of this and made one hole serve for two posts by planting a post at each end of it."

"Yes," commenced "Old George" with fine irony, "that certainly was bright of him to think of a thing like that——"

Building the Foreman's Fence

"Oh, I don't know," broke in the foreman, who had joined the group a few minutes before; "some of these obvious things are the hardest to see. I remember some years ago being at work on a fence for a cattle corral; the ground was a cemented gravel, full of large boulders and we had been fooling around the job a couple of days before someone thought to do the digging in the form of a trench. When I say full of boulders, I mean just that, it's no uncommon thing in those parts to get enough boulders out of the excavation for the cellar to build the lower walls of the house. It is something calculated upon and the masons have become quite expert in building this style of wall. They crack the large boulders into four, turn their flat sides outward and fill in the spaces with the smaller stones.

"Say, kid, run and get that old pocketbook out of my tool box, will you? I think there's a photo in there that'll give some idea of what the job was like."

The Picture of the Fence

The "kid" returned in a few moments with the pocketbook, and Fig. 4 was sorted out from amongst its contents.

"As I look at them now," said the foreman, "the boulders don't seem to be quite so big as they did when I was helping to lift them out of the trench, but I think you'll all agree that to dig post holes, 4 ft. apart and 4 ft. deep, in such ground as that would be interesting to say the least."

"I remember a job of fence building I had charge of some years ago," said Scotty, who had been busy for the last few minutes with his pencil and a piece of sheathing, "and I very nearly came a cropper on it, too. It was a picket fence and the drawing supplied by the architect looked something like this," and he showed the sketch, Fig. 5.

Scotty's Fence

"There was over 2000 ft. of this fence to be built at each end of a long steel bridge. I had charge of the work at one end and an old-timer had charge at the other. I was some younger then than I am now but at that time thought I knew a whole lot more, and was rather upset (though not outwardly so) when I found that the old-timer was carefully spacing all his posts as he set them, in order that the pickets might space evenly and work out so as to come in the center of the posts and cover the joints as the drawing shows.

"You see, in my hurry to get ahead of the other fellow, I had overlooked this little matter, had set my posts fairly close to measurement (but not accurately so) and was intending to space my pickets

2 in. apart and let them come where they would. I was just about ready to put on the pickets when I got next to myself and seeing that something had to be done I evolved the following scheme:

"I marked off a rod, showing the pickets with the proper spacing, as they were on the drawing, and then, by testing each panel with the rod, I was able to tell how much to shorten or lengthen the spaces so as to make the pickets come out even. The scheme worked well and I was able to prove that my method was faster than the old-timer's—that is, setting the posts carelessly and spacing the pickets afterward was a faster method than setting the posts with sufficient care to avoid this latter spacing.

How We Built It

"I had a somewhat larger gang than the one of which Bliss is so proud, and I remember how we followed each other along that fence, one man nailing the post pickets, two more testing and spacing off, another placing the pickets and driving the top nail, and another following along behind driving the remaining nails. This last man was a laborer, a big husky Scandinavian, who had had a lot to say about what an easy job a carpenter's was. He did horizontal nailing on this fence all one day, and the next day couldn't use his right hand; it took some time to convince him that the reason was, because of the little 8d nails he had driven the day before. A lot of men could discover new sets of muscles by working steadily at some of the easy things a carpenter does."

"Say, chief," said Bliss, who had been examining the photo, "how long is it since you took this picture?"

"I can't say exactly," was the reply, "seven or eight years. Why do you want to know?"

The Picture Criticised

"Oh, no particular reason, only from what I know of you and from what you say about helping to lift boulders out of a trench, I take it that you were in a subordinate position at that time and I was just wondering how long it would be before I could expect to be a foreman. I did my post hole work last week."

No one made the obvious rejoinder, and after a slight pause, Bliss continued. "There's one little thing I wanted to tell you about. One of the tenants where I built that fence was a music teacher. He begged some scraps of wood off the boss and wanted me to show him how to make a garden seat. I remembered what Scotty was telling us the other day about his landlord. I also remembered that my little girl is taking music lessons, and that thus far I haven't been able to get anyone to 'show her how' for nothing; so I told Mr. Teacher that I would make the bench for him for fifty cents, or teach him how to make it for half a dollar. After he had recovered his breath, he gave me the fifty cents and I made the bench."

The Fence a "Prize Winner"

"It must have been a prize winner," said Shorty, "made out of scrap fence lumber for a fee of fifty

cents. What did you make at it, ten cents an hour?"

"Where I do my own designing," explained Bliss loftily, "my regular charge is \$1 per hour. I made Mr. Teacher a seat, 6 ft. long, with arms and a back to it, and finished the job in a little over twenty minutes. I'm no camera fiend and can't show you a photo of it, but I knew some of you doubting Thomases wouldn't believe me, so I made a sketch of it and here it is," shown in Fig. 6.

"By golly Bliss," said Old George, "you'll be a foreman yet there's never a doubt of it, always supposing of course that the hangman doesn't get you first."

"Yes," agreed Bliss complacently, "I flatter myself there's some class to that design."

cast-iron. Brass is used solely for the sake of its appearance; it is a bad material, on account both of its softness and of its tendency to corrode.

Probably the best kind of hinge is formed of cast-iron with steel pins. It is mistaken economy to use very narrow hinges. The leverage on the screws is materially reduced by using wide hinges, and the additional cost is not worth considering.

Swing-doors are usually hung with a special contrivance at the bottom. The door fits into a metal shoe, which works on a pivot. This pivot is regulated by a spring, which is fixed under a brass plate flush with the floor. These are expensive goods, but when well made and properly fixed they will last for years. About the best kind of hinge for a door

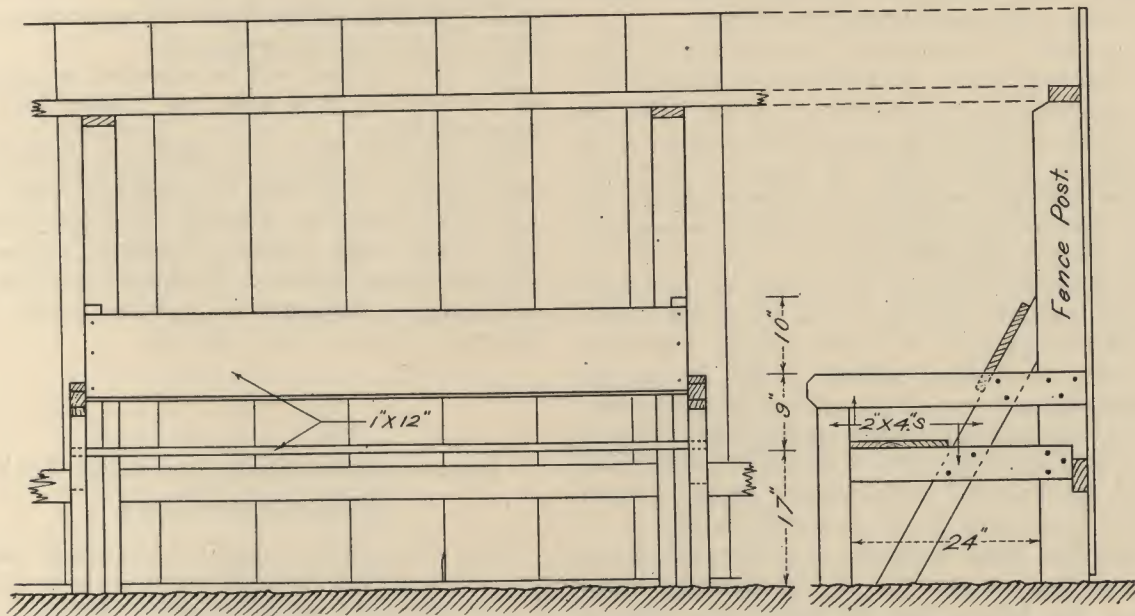


Fig. 6—Front and End Views of the Seat Made by "Bliss"—Scale $\frac{1}{2}$ In. to the Foot

"Class to the design," growled the other, "I wasn't thinking of the design, I was referring to your nerve; anyone who would charge, even a lawyer, fifty cents for building a thing like that, ought to be either a foreman or in jail."

Bliss took one last puff at his pipe and then (as the whistle blew) knocked the ashes out of it. "Jealousy, jealousy!" he explained to the others.

(To be continued)

English Door-Hardware

A writer in one of our English exchanges discusses the matter of what he designates as Metal Door Fittings in a way likely to prove interesting to American readers and we therefore present the following extracts:

The various appliances for opening and closing doors and windows, securing them from intrusion, and fastening them in their places, all have to be fixed by the carpenter, and are usually known as joiners' ironmongery.

Hinges are made of brass, or of wrought-iron or

that is intended to be self-closing is that known as a "rising butt." The part which is fixed to the door has a spiral action in an upward direction when opening, and thus the additional advantage is gained of a slight rise in the door, by which it is enabled to clear the carpet when opening, and is closer to the floor when shut.

Cross-garnet hinges are used for the smaller kinds of outhouse doors; and strap hinges, with hook and ride action, for larger doors and gates.

Many varieties of screws and nails are used in fixing joinery. It would be impossible here to enumerate them all, nor would it serve the present purpose to do so. In old joinery the work was put together with wooden pegs, usually of oak. In very superior work this is done in the present day; indeed, in work not intended to be painted it is almost necessary to do so to avoid the unsightly appearance of nail-heads and screw-heads.

Locks for ordinary domestic work are of several kinds. Interior doors of a less thickness than 2 in. are usually fitted with a lock called a rim lock, the mechanism of which is inclosed in an iron box, which is screwed on to the face of the door. The box is usually made of cast-iron and japanned.

In America it has been, and perhaps still is, the custom to devote very much more care and expense to the ornamentation of rim locks than is the case in this country, the outer plates being frequently elaborate and beautiful pieces of metal work even in inexpensive locks.

When a Mortise Lock Is Used

When it is desirable to conceal the lock entirely, a mortice lock is used. The object to be aimed at in a mortice lock is compactness, so that the stile of the door shall not be unnecessarily cut into and weakened. This object was perhaps first successfully attained by a lock of American manufacture, in which the mechanism was arranged in so small a space that the mortice to receive it could easily be formed in the space between the tenons.

The depth of these locks was only $1\frac{1}{4}$ in. and the thickness $\frac{5}{8}$ in. An additional advantage was the simplification of the labor of fixing. The top and bottom edges being rounded, the mortice could be made by simply boring two holes with a center-bit, and cutting away the space between them, the labor involved in making the mortice rectangular being entirely dispensed with.

A useful idea which is carried out by some lock-makers is to affix a number to each key and also to the plate of the lock. A register is kept of all locks and their destination, so that a lost key can be readily replaced or an additional key obtained merely by forwarding the number to the maker. It will be obvious also that such a system of numbering would obviate much inconvenience resulting from mixing up the keys of a large establishment.

Locks for front doors are nowadays commonly of small size, but are often of very excellent mechanism. One kind of lock for this purpose consists of a number of thin levers of brass or iron working side by side. Another kind is a solid bolt with a spring. Both kinds, when well made, are convenient and efficient. By an arrangement of small bolts acting on levers, these locks can be counter-locked, so that the key cannot be worked; they can also be held open when it is so desired.

Method of Fitting Door Handles

The usual method of fixing door-handles is a very poor contrivance. A screw, necessarily short, is inserted through the neck of the handle, to get what grip it may on the spindle, or bar, which passes through the lock. The consequence of fixing handles this way is that they are constantly coming off.

A more secure way is that in which the spindle is grooved, and the angles indented in a spiral direction. The inside of the handle is grooved in a screw form, and this screws on to and retains a firm hold on the spindle; when it is in the required position, a screw is inserted in the neck of the handle, and screwed down into the deep groove on the spindle; this holds the handles firmly in their proper position.

Latches to street-doors ought always to have a plate or curtain over the key-hole to keep out the dirt.

Large Apartment House for Staten Island

One of the most pretentious structures in the way of apartment houses on Staten Island, N. Y., is the building which has just been planned to provide living accommodations for 95 families and the estimated cost of which is placed at approximately \$250,000. It will occupy a plot 200 x 150 ft. on Wall Street, between Stuyvesant Street and Public Lane, St. George, the structure itself being 200 ft. wide with an extreme depth of 138 ft. There will be four large outer courts and an interior court approximately 75 x 75 ft. in size.

Owing to the steep grade upon which the building will be erected, one facade will be five stories high and the opposite one six stories. The facades on all four sides will be of brick trimmed with terracotta and Indiana limestone.

The roof treatment will be somewhat unusual and will be fitted up as a large roof garden with pergolas and seats.

There will be eighteen families to each floor, the suites consisting of three, four and five rooms each with bath. One of the specially convenient features will be the large number of built-in closets for which the plans provide. The architect of the improvement is Benjamin W. Levitan of 20 West Thirty-first Street, New York City.

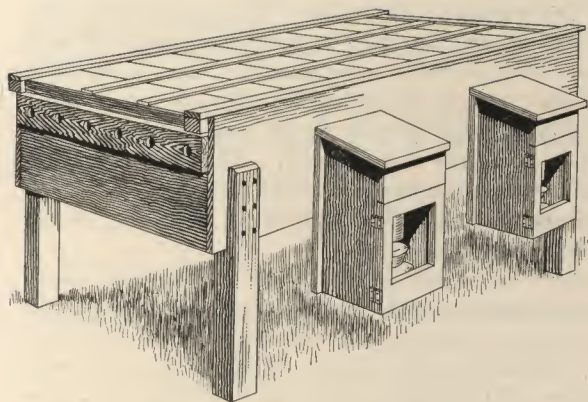
Important Addition to a New York Department Store

What will be when completed the tallest department store in New York City is about to be erected in the shape of a seventeen-story addition to the building at Broadway and Thirty-fourth Street, the estimated cost of which is placed in the neighborhood of \$500,000. The addition will be erected on the westerly end of the present ten-story building and will extend from Thirty-fourth Street through the block to West Thirty-fifth Street, having a frontage of 47 ft. on the former and 50 ft. on the latter street, with a depth of 197 ft. 6 in.

The excavation for the basement and sub-basement to a depth of 24 ft. will be something of a task, owing to the fact that the rock backbone of Manhattan Island comes to the surface at this point. It is interesting to state that the foundations for the present ten-story building required something like two years to complete.

The plans for the seventeen-story addition have been filed by Architect R. D. Kohn of 56 West Forty-fifth Street and it is expected that work on the structure will be commenced at an early date. In order to make room for these additions, two brownstone dwellings in Thirty-fourth Street which for several generations were fashionable residences will be razed.

Daughter—Pa, what is your birthstone?
 Father of seven (wearily)—The grindstone, I guess, my child.—*Pittsburgh Dispatch.*

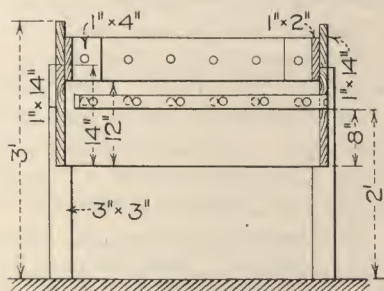


A Drying Apparatus for Fruits and Vegetables

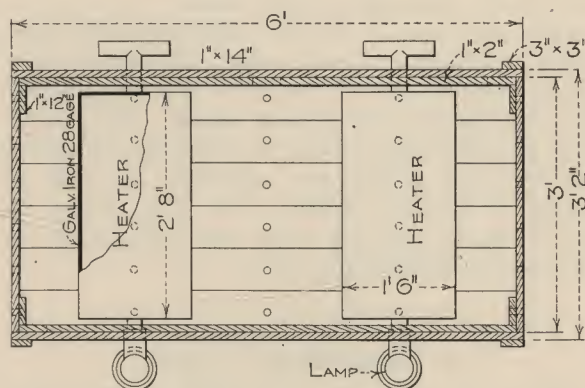
A Simple Device Which Any Carpenter Can
Readily Construct with the Aid of a Few Tools

ENERGETIC efforts are being made throughout the country to conserve the food supplies by drying and canning the vast quantities of fruits and vegetables which have been produced, to the end that there may be no scarcity of them during the months which will intervene before another harvest season. A simple method of preserving

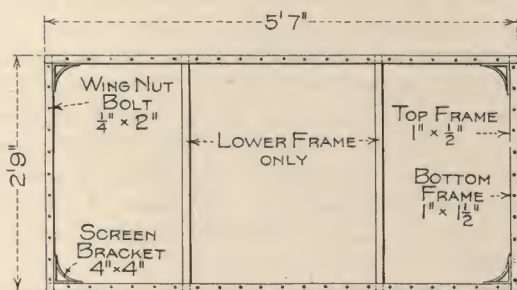
legs or supports, with proper ventilating holes as shown and a common hot bed sash as a means for concentrating the heat and preventing dust, flies and other vermin from contaminating the food. In order that drying may be carried on at night and on cloudy days, a pair of heaters and easily constructed radiators are provided. Almost every



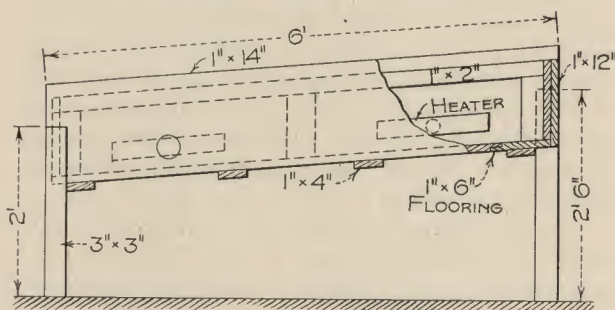
End View of the Apparatus



Plan of the Drying Apparatus



Plan of the Drying Screen



Vertical Longitudinal Section of the Dryer

Miscellaneous Constructive Details of the Drying Apparatus

great supplies of these perishable food products is by drying and in the accompanying illustration we show how a device for the purpose can easily be constructed by any carpenter or other mechanic handy in the use of tools.

The apparatus consists of a box mounted on four

farm and suburban home has a hot bed sash and a brooder heater so that these features are readily provided.

The drying rack consists of muslin with taped ends and sides attached to a light frame as shown in the illustration. Eyelets are provided in the tap-

ing to facilitate replacement on the frame when it becomes necessary to wash the original cloth.

The dryer here illustrated has about 17 sq. ft. of drying area and will handle half a bushel of material at one loading. A temperature of from 95 deg. Fahr. to 122 deg. Fahr. can easily be maintained with sunlight only, the lamps applying the same temperature at night, or the temperature can be increased to any desired useful point if run as auxiliaries to the sun in the day time. The lamps are of extreme value in drying such produce as corn or other rapidly fermenting vegetables as the process is so hastened by the extra heat that complete evaporation is obtained in a minimum of time. The heaters are so constructed as to supply a continuous current of fresh hot air at all times which makes rapid drying and insures a fine product containing all of the food elements.

The apparatus will dry all vegetables and fruit suitable for drying and as intimated above can be constructed by anyone capable of using tools. A device of this nature is illustrated and described in one of the reports on crop conditions sent out by the American Steel & Wire Company which points out that in early Spring an apparatus of this kind furnishes an ideal place to start young plants by placing a few wood strips over the radiators and putting shallow plant boxes on them. The lamps furnish the necessary bottom heat.

Those who wish to do their share along this line should call attention to the value of drying the surplus perishables so that the nation may be provided with food during the coming winter. Full directions as to the best method of preparing vegetables and fruit for drying are contained in what is known as Farmers Bulletin No. 841, copies of which can be obtained from the Department of Agriculture, Washington, D. C.

A "Snail-Shell" Stair

What is said to be "the only spiral concrete staircase of its kind in the world" has just been placed in the tower of the South-East Museum in Los Angeles, Cal., says a writer in *Engineering Record*. Similar stairways exist elsewhere, as in the tower of St. Paul's and the tower of the Cathedral in the City of Mexico, but they were built before the age of concrete. When viewed from above, its resemblance to the shell of a snail at once gave it a name.

"The South-East Museum helical staircase is built inside a well in the center of the tower, thus not only preserving for shelves or mounted objects the entire interior wall space of the tower, but also supplying on its own exterior wall additional space which may be employed for museum purposes.

. . . The tower containing the stairway is seven stories in height, with three mezzanine balconies in the three upper stories, giving the equivalent of ten stories.

"The tower is 35 ft. square, and is supported by twelve columns and external walls 8 in. thick, reinforced with steel. It rests on a solid concrete slab or raft 3 ft. 6 in. thick. The total height is 125 ft.

and the weight is 1000 tons. The construction was carried on continuously, a story being poured at a time. The staircase well is 9 ft. 2 in. in external diameter and is supported by four corner columns with 8-in. walls between them, with light and ventilation openings at each story. The stair is known as a caracole, on account of the likeness to a snail-shell presented by a vertical view, as shown in one of the photographs.

"With one exception it is the only helical staircase in America having a hollow center, the other one being an ancient stone staircase in the tower of the Cathedral in the City of Mexico. The stairway contains 160 steps with 7½ in. rise each, and was built around a galvanized iron form in the shape of a pipe, while wooden forms were placed for the stairs. Material was placed at a special rock-crushing and sand plant located about 1 mile from the building, in a dry river bed."

Production and Value of Hudson River Brick

The supply of common building brick for the enormous consumption of Greater New York, the largest brick market in the United States, comes principally from the narrow strip of land on either side of the Hudson from New York City to Cohoes, including Bergen County, New Jersey. Every county in this region contributes to the supply except one—Putnam—and in late years the Raritan district, in Middlesex County, New Jersey, has contributed largely to the Greater New York market.

In 1916 the number of brick marketed in this region, according to a report in preparation by the United States Geological Survey, Department of the Interior, was 893,552,000, a decrease of 66,975,000 brick. The value of this output, however, was \$5,915,254, an increase of \$906,189 over 1915. The average price per 1000 brick was \$6.62, an increase of \$1.41 over 1915.

The New York part of the region is by far the larger producer, reporting, for 1916, 702,596,000 brick, or 79 per cent of the total, valued at \$4,552,468, or 77 per cent of the total for the region. This was a decrease of 38,972,000 brick, but an increase of \$807,920 compared with 1915. The average price per thousand in this part of the region increased \$1.43, or to \$6.48. Ulster was the leading county in this part of the region, reporting 222,651,000 brick, valued at \$1,444,275, a decrease of 6,692,000 brick but an increase of \$333,783 in value, compared with 1915.

The New Jersey part of the region reported 190,956,000 brick, valued at \$1,362,786, being a decrease of 28,003,000 brick, but an increase of \$98,269.

President Harms of the National Association of Sheet Metal Contractors makes announcement of the appointment of the following program committee for the next convention of the association: Chairman, Paul L. Biersach, Milwaukee; A. W. Howe, Cleveland, Ohio; Otto Guessenhainer, Sheboygan, Wis., and H. C. Knisely, Chicago.

A-F-C is similar, that is proportional to the triangle *B-H-G*, the bevel at *F* will equal the bevel at *H* and the reason for his rule will be found.

By a well known geometrical principle, the triangle *B-E-C* is similar to the triangle *A-B-C* and

$A-B : B-E :: A-C : B-C.$

Now *A-B* equals *B-G* and *B-E* equals *B-H* and *B-C* equals *C-F*. Substituting these values in the above proportion we have

$B-G : B-H :: A-C : C-F.$

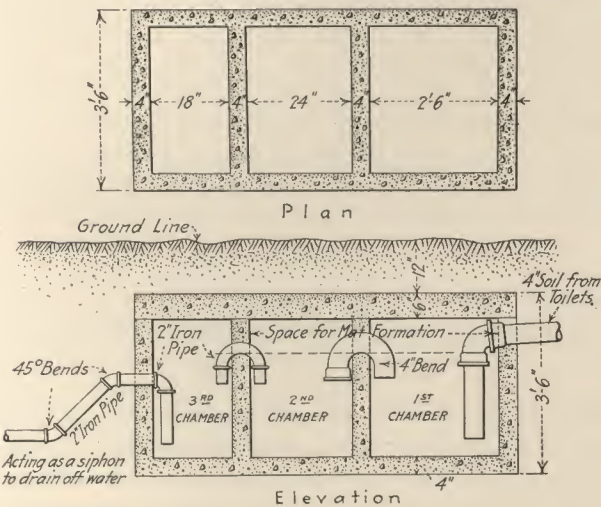
Thus the sides of these triangles being proportional and the included angle the same, the triangles are similar and the angle at *F* is equal to the angle at *H*.

Hence to lay off the backing for a hip rafter, where the end is square, take the length of the hip on one side of the square and the rise of the roof on the other side of the square and mark by the rise.

Another good method for backing hips is found in Fig. 5 of the sketches where *a-b-c* represents the plan of the foot of the rafter over a square corner; *a'-b'-c'* shows the elevation. Make *b'-c'* the same as *b-c* of the plan and gage the rafter as shown at *c'*. This will back any hip or valley whatever the corner may be. If the corner of the building is square, *b'-c'* will always be half the thickness of the rafter.

Some Comments on Septic Tanks

From M. H. G., San Diego, Cal.—I have read with interest the article in the August issue of the BUILDING AGE contributed by Harry Gwinner on sewage disposal and note in one portion of it that he speaks of troughs into which certain parts of the



Plan and Elevation of Septic Tank as Submitted by "M. H. G."

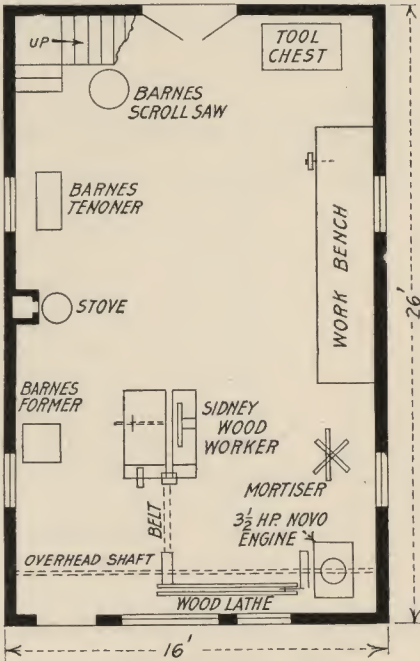
solids pass to be attacked by bacteria. Permit me to ask if this is good practice? As a novice, I recently constructed a concrete septic tank as an ex-

periment using some new ideas and as it is acting perfectly some particulars regarding it may be of interest to other readers of the paper. I am therefore sending sketches, Figs. 1 and 2, which will make the construction clear.

The top slab is 6 in. thick and is 1 ft. under ground. The first chamber is 2 ft. 6 in. wide; the second chamber 2 ft. wide and the third chamber 1 ft. 6 in. wide. The discharge is about 100 ft. from the house and the liquid discharge is perfectly clear and free from smell. The tank has been in action about four months but my one great aim was to keep any solids from entering the drain.

Shop of an Ohio Builder and Contractor

From M. T. L., Kingston, Ohio.—Possibly some of the readers of the BUILDING AGE may be interested in the shop I operate which, though rather



Shop of an Ohio Builder and Contractor

small, has the machines with which it is equipped so placed as to permit of rapid work. The building is 16 ft. wide by 26 ft. in length and the plan here presented gives a good idea of the arrangement of the machines, the workbench, engine, tool shed, stove and overhead shaft. I make use of a Sydney woodworker and several Barnes machines including former, tenoner and scroll saw. The window opposite the left-hand end of the wood lathe is raised when using the woodworker so as to allow long pieces of material to be passed through the window. The motive power is a Novo gasoline engine which is inexpensive to operate and is always ready for use. Its position adjacent to the wood lathe is clearly shown on the floor plan. The position of the mortiser is also shown.

I do a great deal of jointing and ripping at the shop and haul the material to the jobs on which it is to be used. I make no use of portable machines. At odd times and during bad weather I make and repair furniture, make window and door frames, stairs, etc. It may be interesting to state that I made all the furniture in our Masonic Lodge room with the exception of the chairs.

I have in my shop about 300 copies of the BUILDING AGE when it was known as *Carpentry and Building* and I often refer to them for information.

I might say that the shop is one and one-half stories in height and the second floor is used for lumber, etc.

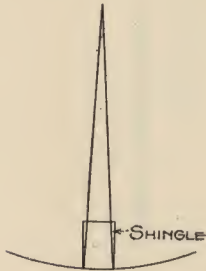
ent sections of the country and thinking the readers might be interested in my shop I am sending a few particulars. My little shop is located on Water Street in the quaint old town of Nantucket, overlooking a beautiful harbor that is full of life and prosperity, where hundreds of tourists arrive every day during the summer and enjoy the bracing air, the delightful bathing, boating, fishing, etc. My shop is devoted largely to jobbing, cabinet-making, repairing antiques, crating, etc., and is operated by hand power only. It is a quaint little shop where one can do an honest day's work with health and comfort and not be crazed with the noise of the buzz saw or whirling motors. The writer has had twenty years' experience in this kind of work and knows whereof he speaks.

Constructing a Gothic Roof for Barn

From R. W. W., Dayton, N. Y.—If "C. E. K." of Fiske, Saskatchewan, Canada, whose inquiry appeared on page 448 of the August issue of the paper will read closely the articles in the August issue of the present year and for May, 1915, he should experience no difficulty in obtaining the figures used on the square for the cuts which he requires.

Shingling a Cone-Shaped Roof

From Builder, Redford, N. Y.—Assuming that "W. A. W.," West Liberty, Iowa, gives the correct dimensions of his cone and that it is 11 ft. in diameter, then the slant height will be about 8 ft. He should draw two lines starting from a point as in the accompanying sketch making them 8 ft. long and as far apart at one end as the width of his shingle.



Trim to fit the line and cut on one pattern.

Directions Wanted for Making a Light Brown Dye

From J. C., Detroit, Mich.—I come to the Correspondence Department for information in regard to a job which involves re-finishing a dining room table to match a china cabinet. The finish of the china cabinet is a very light brownish yellow which is rather dull in color. I have been unable to obtain any dye that would produce the proper effect and I therefore ask some of the readers to tell me how to make a dye of this nature.

Can one obtain the primary colors in dyes so it would be possible to secure the different shades?

A Carpenter Shop in a Quaint Town

From A. L. Fisher, Nantucket, Mass.—I have noticed in some of the more recent issues of the paper reference to carpenter shops operated in differ-

Remedying a Squeaky Floor

From Contractor, Clinton County, N. Y.—If "W. J. M.," Lakewood, Ohio, whose inquiry appeared in the August issue of the paper, can get at the underside of his floor and he has floor lining, he should put screws through the floor lining into the floor. If he has no floor lining, he may screw strips to the underside of the floor. If he cannot get at the underside of the floor, he may use a Forstner bit and put screws in the joists or put nails in the joists. The nails should be 10d finish. If screws are used on top, the holes should be filled with wood.

Troublesome Chimneys

From G. C. C., New Jersey.—I would be glad to have the readers give me their views as to the best method of correcting some leaks in a defective chimney. I presume the trouble is caused by porous brick. I have trouble with two such chimneys and am positive that the leaks come from moisture absorbed through the brick as I have made necessary connections to the chimney and the roof with flashing when making repairs. I would like to know if there is a waterproofing paint that can be applied to light colored pressed bricks without discoloring them.

Getting Out a Quarter-Turn Wreath on the Band Saw

From W. S. W., Hillsboro, Ohio.—In answer to "W. W.," New York, in a recent issue of the BUILDING AGE, I am sending the following explanation as to the method of getting out a quarter-turn wreath on the band saw; also a drawing showing how to lay out the work. I am also sending a drawing showing an apparatus I made several years ago for sawing out this kind of work. It is nothing but two boards hinged together with a fence screwed on the top board. The correspondent can cut a board the same angle as the pitch or any other

angle he may wish and slip it in between the two boards, drive a little nail in to hold it in place and this will give the pitch he wants. Then take a thin board as shown at *A* and clamp it on as shown allowing it to project over one end. Then screw the piece to be sawed to this board and saw through the blocks, board and all. Always do the outside sawing first so that the piece will not drop off until you saw the last line.

The stairs should be of such a nature as to give the wreath the same pitch as the rest of the rail. To do this draw the line *b-c* and make *b-d* the width of a tread. This is the first step below the landing. Make *d-e* equal to *b-d* the width of a tread. Now

horizontal lines from 1', 2', 3', etc. The intersection of these lines will give points through which to trace the curve which will be the pitch of the inside of the wreath.

Now we must lay off the top of the blocks to saw to first. Draw *k-l* and make *q-n* equal *g-4* and *q-m* equal *g-w*. This will be the minor axis.

Now with a radius *k-s* and a center at *n* strike the arcs at *p* and *p'*; then with radius *k-s'* and a center at *m* strikes the arcs at *o* and *o'*.

Now stick pins at *p* and *p'* and fasten the end of the thread to one pin and holding the pencil at *n* draw the thread around it and around the other pin holding it tight and trace the curve with the pencil

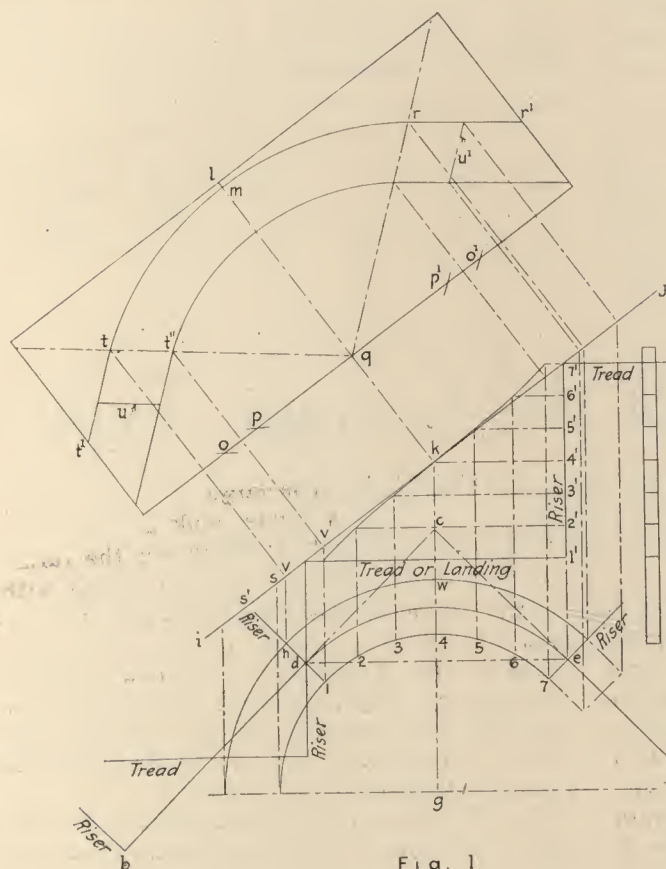


Fig. 1

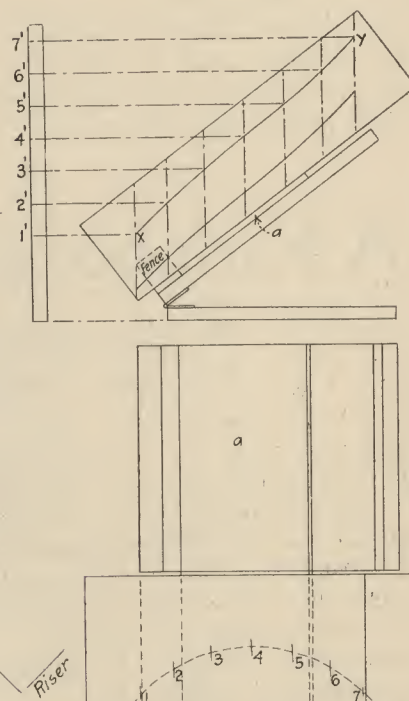


Fig. 2

Getting Out a Quarter-Turn Wreath on the Band Saw as Described by "W. S. W."

draw *c-f*. Next with *c-e* as a radius find the center at *g* and draw the center line of the rail. Now mark the width of the rail *l-h*, and draw the inside and outside lines.

Now lay off the elevation of a few treads and risers and draw the pitch line *i-j*. Next divide the inside line into any number of equal parts as for example, 1, 2, 3, etc., and divide the first riser above the landing into the same number of equal parts as 1', 2', 3', etc.

The center of this wreath will have the same pitch as the line *i-j* which is the pitch of the straight rail. The inside of the wreath will be steeper than this but the center will be less steep.

Draw perpendiculars from 1, 2, 3, etc., and hori-

keeping the string tight. Do the same with the outside curve.

Now draw *v-t* and *v'-t''*. Next draw *t-q*. Do the same on the other end. From *t* to *r* is the twisted part of the rail. If you want a straight shank at each end to get the stair bolt in so as to join it on the straight rail, draw a tangent at each end as *t-t'* and *r-r'*; mark the end of the shank as at *u* and *u'*, then this will be the line to which to cut after you have sawed the inside and outside.

The reader may think *u* and *u'* should be square across the rail on the top side of the block but this is owing to the shape the rail lies in the block. They are square across the rail, as the reader will see from an inspection of the plan.

Now we have all the lines necessary on the top of the block. Next place the block on the board as shown in Fig. 2 and saw out the inside curve. I have shown the block in Fig. 2 rather small but in gluing up the block—if we have to glue it up—make it large enough; for the little timbers you will waste will not be worth as much as your time in making a drawing of all the lines in the wreath to find out just how small a block you can use.

When you have sawed out the inside line set the form on the drawing so the block will be right over the plan. Now take the steel square and draw plumb lines on the inside curve of the block and number them on the block the same as they are on the drawing, 1, 2, 3, etc. Now take a little stick and transfer 1', 2', 3', etc., from Fig. 1 on to it and apply it to the inside curve of the block as shown in Fig. 2. This will give the points through which to trace the curve.

Now we have the line on top of the block *u* and *u'* to serve as a guide by which to cut off but we must also have a line on the inside of the rail. To get this take the pitch board and stand it on end with the rise down and the tread perpendicular and with the sloping side to the right. Set it to the line *u*

and mark on the sloping side; hold it the same way and move around to *u'* and mark on the sloping side again. Now we have a line across the top of the block and on the inside of the rail it would just fit the square end of the straight rail. If we locate the point *x* and *y*, Fig. 2, and take a straight strip of paper as wide as the rail is thick, having the ends cut square and then bend it around the curve with the top edge touching the point *x* and *y* and mark around the paper on both edges and both ends without letting the paper move, it will give the end cut and the line to which to band saw.

Now we can band saw the outside line of the wreath. Then it will drop off. Now cut off the ends to the lines established and put on a narrow saw with plenty of "set" in it. Lay the wreath with the back or outside down and saw to the line on the inside. Keep turning the wreath so that it touches the table right at the saw all the time.

Now we must be very careful for after we leave the straight shank it is twisting on the saw all the time until we get to the straight shank on the other end. Saw a little end off the straight rail and mark both ends of the wreath and mold it out by hand.

A Farmhouse of the Cottage Type

An Arrangement of Rooms Which Secures Unusual Privacy for the Family of the Owner

WE have taken for the subject of our colored supplemental plate this month a modern farmhouse of frame construction and of what may be termed the cottage type of architecture. It has been designed for a corner of the farm land so that the manager can have a good view from his office of what is going on and thus oversee the workmen. The house has a ground area of 32 ft. frontage and a depth of 61 ft. The plan is compact and all space is utilized to good advantage. One outstanding feature of the design is the arrangement of the rooms for the family of the owner, which are entirely separated from that portion of the house occupied by the hired help.

The Men's Washroom

At the rear of the house is located a porch, where the men coming from the field enter the wash room. Here they can clean up before going to their rooms located on the second floor or attic and which are connected with the wash room by means of the flight of rear stairs, as may be seen from an inspection of the main floor plan. This arrangement of the wash room eliminates or rather renders unnecessary the men going into the kitchen to wash and interfering with this part of the household work. The wash room is connected directly with the kitchen, as well as attic, and contains a large wash basin, adjoining which is a toilet with closet for

the workclothes of the men which they use in the field.

The kitchen is large and contains a combination coal and gas range, sink and closet, and it is in this room that the meals for the farm help will be served. The kitchen is connected with the dining room through a commodious pantry.

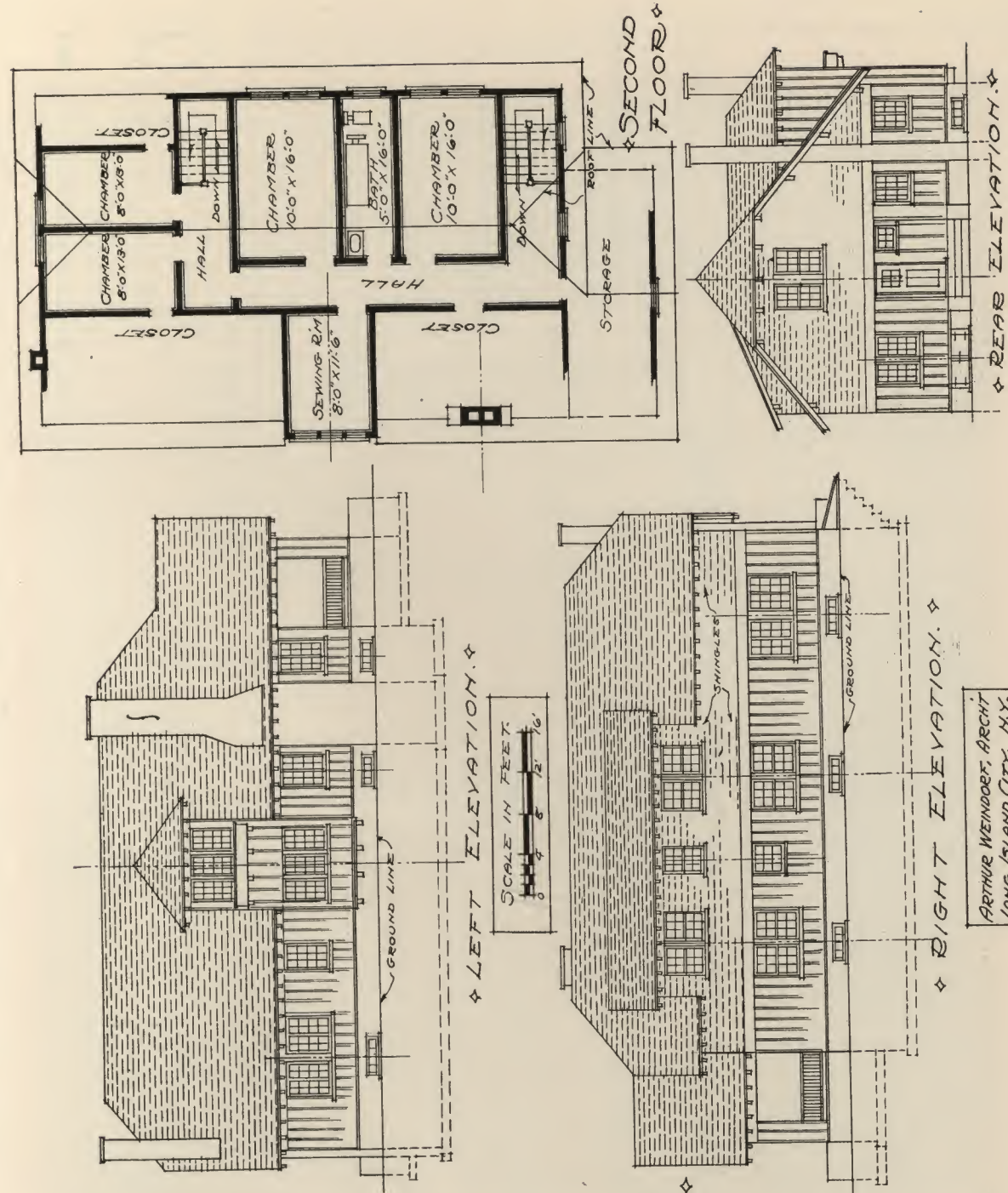
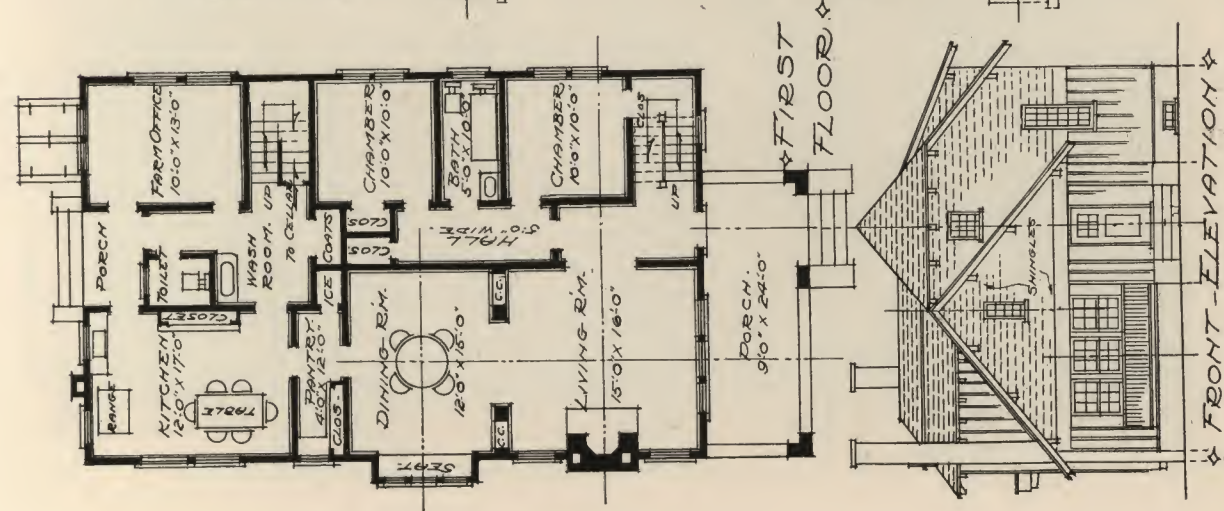
The dining room is of good size and contains a large window seat. The room is connected directly with the living room by a columned opening and between the columns and the separating wall, china closets are built.

The Living and Dining Rooms

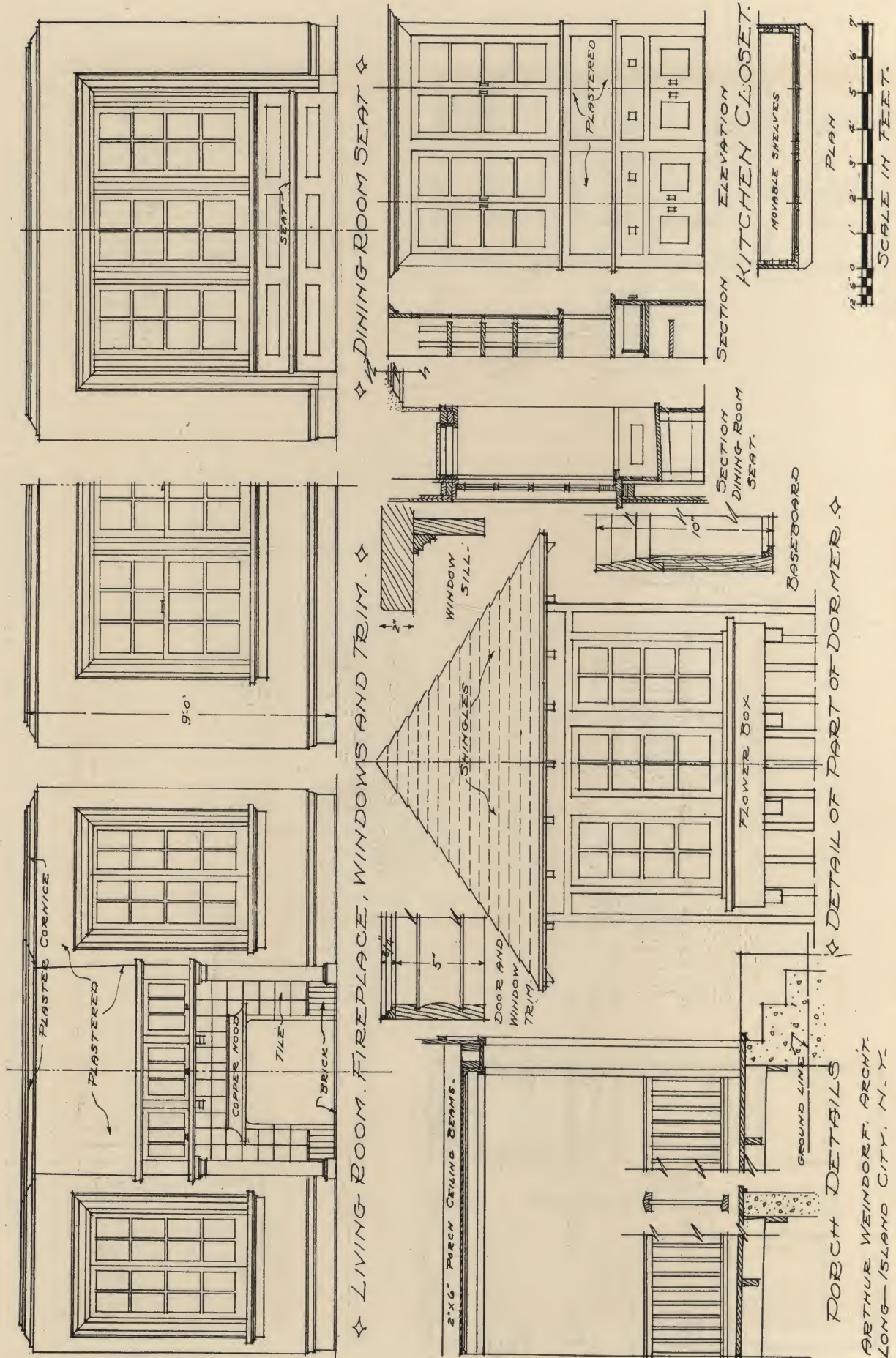
The living room is somewhat larger than the dining room, and contains a fireplace, which is so placed as to face the door from the hall. The two rooms can be used together when the dining table has to be stretched to accommodate the folks for the big dinners that are given at various times of the year.

The bed rooms and bath of the farmer's family are separated from the rest of the house by a private hall, as shown on the floor plan.

In the attic or second story are located four sleeping rooms, a sewing room, a bath room and a large storage closet at the front and another under the roof toward the rear. Two of the sleeping rooms are connected directly with the farmer's living quarters by means of the stairway at the front of the house.



Plans and Elevations of the Farmhouse of the Cottage Type Shown on the Colored Supplemental Plate



ARTHUR WEINDORF, ARCHT.
LONG-ISLAND CITY, N. Y.

Miscellaneous Constructive Details of the Farm House of the Cottage Type Shown on the Colored Supplemental Plate



Referring now to the main floor plan, it will be seen that the farm office is located at the rear of the house and is a place where the farmer can plan out his work and take care of the various problems which arise during the year. In these days of advancement in the raising of farm produce and the breeding of cattle, a file system and data of costs must be kept and the farm managed on a business basis.

The Basement and the Foundations

According to the specifications of the architect, a cellar is to be located under the entire building and in it is to be provided a large furnace room, a laundry, a large cold storage room, which is separated from the rest of the rooms, and such other features as may be found necessary or desirable.

All foundation walls and footings are to be of concrete, the walls to be 8 in. thick and supported on footings 10 in. deep and extending 6 in. beyond each side of the wall above.

The chimneys which are to take care of the furnace and kitchen range are to be built of brick laid up in good cement mortar and all flues lined with vitrified flue lining. The chimneys are to be supported on concrete foundations. Where the chimneys are exposed to the exterior they are to be covered with stucco.

All concrete used is to be mixed in the proportions of one of cement to three of sand and five of broken stones not larger than will pass through a 2 in. ring.

The Framing Timbers Used

All framing timbers are to be of spruce. The corner posts are to be 4 x 6 in., the plates 4 x 4 in., the girders 6 x 8 in., the first tier of floor beams 2 x 10 in., the second tier of floor beams 2 x 8 in., the second floor ceiling beams 2 x 6 in., all placed 16 in. on centers and fastened with 2 x 2 in. cross bridging placed 6 ft. apart.

The studs are to be 2 x 4 in. and spaced 16 in. on centers and doubled at all openings. One row of cross bridging is to be placed in all studding. The rafters are to be 2 x 8 in. and 2 x 6 in. and spaced 20 in. on centers. The porch floor beams are to be 2 x 8 in., and the ceiling beams 2 x 6 in. all spaced 20 in. on centers.

The Exterior Covering

The entire exterior frame of the building is to be covered with 1 x 9 in. hemlock sheathing laid diagonally. This is to be covered with 3 ply building paper, over which is to be laid 8 in. boards running vertically with the joints covered with battens.

The rooms of the main story are to have double floors, the finish floors being maple in the dining and living rooms, while the other rooms are to have floors finished with comb grain North Carolina pine. The attic floor is to be single and of pine. The trim for the entire house is to be of cypress.

All the rooms are to be plastered with a hard smooth finish except the dining and living rooms, which will have a sand finish.

The rafters are to be covered with roofing boards, over which is to be placed a good quality of building paper, and upon this metal shingles are to be

laid. With the many patterns available in the market almost any desired effect may be obtained. The exterior cornice, rails, brackets, etc., are to be of white pine.

The Trim Used

The trim in all the rooms is to be finished natural. It is to be well filled, brought to a smooth surface, and varnished two coats.

The floors are to be brought to a smooth surface, filled and varnished, the living and dining rooms to have an additional coat of wax.

All exposed exterior trim is to be painted three coats of white lead and linseed oil.

A good system of plumbing is to be installed. In the kitchen will be placed an iron enameled sink, a 40 gal. galvanized iron boiler and a range. A gas range and a three-part wash tray of soapstone will be located in the cellar.

The Plumbing Fixtures

All plumbing is to be exposed and all rough pipes are to be painted with an aluminum paint. The plumbing in the bath room is to be of the open type. The bath tubs are to be iron enameled, the water closets are to have china bowls and high tanks, and all wash stands are to be one piece enameled iron. The exposed pipes are to have a nickel plated finish. All fixtures are to be supplied with hot and cold water.

The house is to be heated by steam and the radiators of plain design are to be located in all rooms except the kitchen and the pantry. The furnace and radiators are to be of such a size as to properly heat the building in zero weather when given proper attention.

All the sheet metal work is to be painted on both sides before it is laid. All leaders are to be of galvanized iron and of a neat square design. Galvanized iron hanging gutters are to be placed where necessary.

All hardware is to be of a bronze plate finish and to match the lighting fixtures and radiators.

The Lighting System

The lighting is to be by means of electricity and gas and combination fixtures are to be installed. Two drop pendants are to be used in the living room and dome in the dining room.

In this case the architect estimates the cubical content of the building to be 45,954 cu. ft., on which he places a unit cost of 6c. per cubic foot. This figure, however, does not include the contractor's profit. He allows \$800 for the masonry work, including concrete footings, foundation walls, chimneys, fireplace; \$4,300 for the carpentry work, including the lumber bill and mill work; \$350 for painting, staining and printing; \$470 for the heating; \$430 for the plumbing and gas fitting, and \$450 for the plastering.

The house shown on the supplemental plate was designed and the specifications prepared by Arthur Weindorf, Long Island City, New York, or care THE BUILDING AGE, 243 West Thirty-ninth Street, New York City.

BUILDING AGE

FORMERLY CARPENTRY AND BUILDING

(Founded in 1879 by David Williams)

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Index to reading matter will be found on page 17 of the advertising section.

OCTOBER, 1917

The New York Building Conference

In our last issue we referred to a movement which was then being launched to bring together for a conference on the New York building situation, architects, builders, contractors, real estate men, dealers in supplies, etc., with a view to determining, if possible, "why building construction should not be permitted to proceed." As a result of the steps which were being taken, a meeting which was undoubtedly the largest of its kind held in the city for many years, took place on Thursday, Sept. 20, in the office of Borough President Marks. There were present something over 200 builders and material manufacturers, bankers, officers of large loaning institutions, real estate men, and labor representatives when President Marks opened the meeting by calling attention to the stagnation of building activity in New York City the present year. He pointed out that during the first eight months plans filed for new structures in Manhattan aggregated \$23,852,925 in estimated cost while in the same period in 1916 plans were filed for new buildings estimated to involve an expenditure of \$100,987,-

645 and of nearly \$51,000,000 for a similar period in 1915. Opinions as to the situation and the manner with which it might be dealt were expressed by several of those present. The Comptroller of one of the largest institutions in the city loaning money on new buildings, admitted that his company had stopped making building loans because it was afraid to lend under present conditions. A member of the Building Trades Employers' Association aroused the patriotism of the meeting by stating that notwithstanding the present hardships, the builders of the country were loyal to the Government. As a result of the interchange of ideas, a resolution presented by Allen E. Beals, favoring the appointment of a Commissioner of Peace Industries, was unanimously adopted. It provides that a committee be appointed from all the leading building trades, the Merchants' Association, the Real Estate Board, the New York Chapter of the American Institute of Architects, and labor organizations "to make a careful study of price conditions and ascertain from architects how many buildings have been postponed through failure to obtain loans and difficulty in securing materials." The situation is certainly one calling for earnest consideration and it is to be hoped that the movement under way may result in devising ways and means which will stimulate building operations in the Metropolitan district.

Demand for Building Materials

In view of the fact that war demands for steel are likely to increase to such an extent as to absorb the output of the mills an urgent plea is made by the Chamber of Commerce of the United States co-operating with the Council of National Defense to use steel for general business purposes only when the requirement is unavoidable. Lumber and concrete are strongly advocated instead and there comes the intimation that unless a steel substitute is found, some manufacturers may be obliged to curtail or even suspend operations during our participation in the European conflict. It is pointed out that materials which can be used in substitution for steel are plentiful in comparison. Lumber may be expected to meet all needs and cement may be had in quantity for concrete work. While there may be delays in getting supplies of these materials, a hopeless shortage does not exist. The committee urges that every effort should be made to use wood and concrete in place of steel wherever this can be done, and construction and development work requiring steel should be postponed wherever possible.

In purchasing materials and supplies it is argued business men will doubtless consider the wisdom of

confining their operations so far as possible to doing business locally. The extraordinary service being rendered by the railroads in connection with the war will limit general transportation service and put an end during the war to the condition which has developed during the past fifty years through the prompt and reliable transportation facilities afforded by the railroads. No longer can a man in Illinois rely upon Pennsylvania as a dependable source of supply for raw materials and equipment. For many commodities the railroads can no longer spare the equipment to bring distant points into close contact. Purchases must be made near at home wherever this can be done. The preference which must be given to shipments of iron and steel will soon make this situation of daily importance.

Wisconsin Architects to Be Registered

An architects' registration law has been passed by the Wisconsin Legislature providing that after Jan. 1, 1918, no person doing business in Wisconsin shall make use of the title architect, or so represent himself without a certificate of registration. A board of five examiners will have full power to prescribe rules and regulations for the examination and registering of architects. Candidates will be required to submit satisfactory evidence as to their thorough knowledge of building construction, building hygiene, architectural history and mathematics. Five years' experience is also required.

In lieu of examination, the board may accept a diploma of graduation from a recognized architectural school supplemented by at least three years' experience. Examination may also be waived in cases where an architect is registered in another state or country having satisfactory standards. Any person already engaged in the practice of architecture at the time of the passage of the bill may receive a certificate without examination.

New Building Code for Portland

The new building code of Portland, Oregon, limits the height of buildings to eight stories and they must not exceed 110 ft. above the street line. They must be set back 1 ft. from the property line for every four stories in height. In masonry construction a reduction has been made in the thickness of the walls required, in some cases a reduction from 12 in. to 8 in. being permitted. The tables regarding the thickness of walls have also been greatly simplified.

Buildings under the new code are divided into seven classes, namely, absolutely fireproof; ordinary fireproof construction with steel frame; ordinary fireproof construction with reinforced concrete frame; semi-fireproof; mill construction; other masonry construction; and frame construction.

The provisions regarding reinforced concrete

buildings have been made to adhere closely with the report made in July, 1916, by the joint committee of the American Society of Civil Engineers, American Society of Testing Materials, American Railway Engineers Association, Portland Cement Association and the American Concrete Institute.

Class in Heating and Ventilating

Circulars are being distributed by the New York School of Heating and Ventilating announcing that the first meeting of the fifth annual season will be held in Room 512, World Building, New York City, on Monday, Oct. 1, for registration of applications to the first-year course, which consists of eighteen lectures, and is the course which has been so popular for several years back, as it enables the young man to grasp the science of heating and ventilation from a complete understanding of the heat unit and its application to the arrangement of different kinds of heating systems. The second-year course will open on Wednesday, Oct. 3, and consists of twelve lectures devoted more particularly to high-pressure work, piping equipment, isolated plants, central heating plants, and similar work.

The course, as heretofore, will be in charge of Charles A. Fuller, 101 Park Avenue, consulting engineer with Clark, McMullen & Riley. Those who desire further information, or the circular issued by the school, should address George G. Schmidt, 512 World Building, New York City.

The Columbus Building Show

Ohio builders and building-supply men are interested in the Columbus Real Estate and Building Show, to be staged jointly by the Builders and Traders' Exchange of that city and the Real Estate Board in the large buildings at the State Fair Grounds, Jan. 21 to 30, 1918. A mammoth exposition is planned, and every phase of the building industry will be represented. M. A. and L. C. Vinson, who successfully managed the Cleveland and Akron building shows, have been retained to manage the Columbus show.

Death of James P. Beck

The trade will regret to learn of the death on Sept. 8 of James P. Beck, general manager of the Portland Cement Association with headquarters at 111 West Washington Street, Chicago, Ill. Mr. Beck was born Jan. 27, 1886, at Odell, Ill., and was graduated from the University of Illinois in 1907. After his graduation in June, 1907, he entered the employ of the Universal Portland Cement Company. Two years later he was made publicity manager of that company and during the Fall of 1915 was chosen to formulate plans for broadening the scope of work of the Association of American Portland Cement Manufacturers with headquarters at that time in Philadelphia. He was later made general manager of the association to put into effect and carry out the plan which he formulated.

Brief Review of the Building Situation

Figures Showing Building Activities in Various Sections of the Country in August, 1917, and August, 1916

THE seemingly unfavorable conditions in the building industry as revealed by the accompanying report, showing as it does a loss of 26.93 per cent in the estimated cost of new construction work in 117 cities for August as compared with August, 1916, are due in large measure to continued unsettled conditions growing out of the gigantic requirements of the government. Prospective taxation and new levies of men are important factors, as is the shortage in transportation facilities and the lack of building mechanics, who have been called to work on army cantonments and other government enterprises.

In rural districts where farmers are reaping the benefits of high prices, there is likely to be a large amount of construction done in the near future, and the outlook for coming months appears much brighter than the present report would seem to indicate.

The Eastern section of the country shows a loss of 34.09 per cent for August, 1917, compared with August, 1916, 44 cities reporting.

CITIES OF EASTERN STATES

	August, 1917	August, 1916
Albany	\$220,650	\$880,575
Allentown	38,455	245,035
Altoona	14,685	120,217
Atlantic City	127,692	47,131
Bayonne	57,873	118,530
Binghamton	99,614	296,754
Boston	5,319,000	5,397,000
Bridgeport	353,537	643,304
Brockton	50,375	149,812
Buffalo	1,210,000	1,756,000
East Orange	43,184	43,620
Erie	230,785	313,785
Harrisburg	188,740	107,749
Hartford	422,065	547,390
Hoboken	23,950	95,623
Holyoke	12,470	41,700
Lawrence	70,200	68,200
Manchester	43,195	164,806
Newark	566,618	564,801
New Bedford	691,787	111,840
New Haven	578,284	383,705
New York:		
Manhattan	2,041,296	4,350,001
Bronx	846,235	1,074,188
Brooklyn	1,700,945	2,711,600
Queens	919,640	1,216,782
Richmond	645,984	1,110,525
Niagara Falls	230,881	185,640
Passaic	87,800	132,650
Paterson	152,390	159,553
Philadelphia	1,554,115	4,472,120
Pittsburgh	707,520	1,442,467
Portland	333,100	497,385
Quincy	100,500	480,355
Reading	37,975	112,500
Rochester	384,641	557,730
Scranton	54,233	155,177
Schenectady	110,614	187,202
Springfield	144,835	370,105
Syracuse	338,270	207,000
Trenton	321,990	258,026
Troy	13,378	414,760
Utica	53,900	125,050
Wilkes-Barre	79,908	64,314
Worcester	531,640	628,176

The middle section of the country shows a loss of 23.3 per cent, this being especially noticeable in such cities as Detroit, Akron, Kansas City, St. Louis and Toledo.

CITIES IN MIDDLE STATES

	August, 1917	August, 1916
Akron	\$860,917	\$2,450,142
Canton	110,310	309,805
Cedar Rapids	195,000	117,000
Chicago	4,277,650	5,783,000
Cincinnati	926,795	1,328,490
Cleveland	4,579,215	2,752,445
Columbus	283,925	548,720
Dayton	131,020	250,775
Des Moines	110,850	139,182
Detroit	2,035,750	4,382,825
Dubuque	38,150	106,650
Duluth	461,733	287,590
East St. Louis	60,572	151,109
Evansville	51,384	137,866
Ft. Wayne	281,175	266,240
Grand Rapids	141,299	438,650
Indianapolis	834,455	1,052,330
Kansas City, Kan.	62,205	51,385
Kansas City, Mo.	603,340	1,211,225
Lincoln	89,580	266,130
Milwaukee	953,961	611,202
Minneapolis	745,425	1,403,895
Omaha	775,625	652,835
Peoria	112,080	431,300
Saginaw	56,698	72,350
St. Joseph	79,680	65,995
St. Louis	807,696	1,162,253
St. Paul	506,214	890,142
Sioux City	216,975	186,475
South Bend	218,223	131,997
Springfield	55,180	193,970
Superior, Wis.	112,870	250,940
Terre Haute	19,525	48,375
Toledo	375,534	1,348,197
Topeka	49,318	152,018
Wichita, Kan.	80,655	36,675
Youngstown	512,105	293,500

There are 20 cities reporting from the South, and show a loss of 18.68 per cent.

CITIES IN SOUTHERN STATES

	August, 1917	August, 1916
Atlanta	\$688,654	\$348,031
Baltimore	480,247	946,406
Birmingham	112,255	248,471
Charlotte	112,225	132,650
Chattanooga	62,525	93,825
Dallas, Tex.	145,159	310,499
Huntington	127,885	127,560
Jacksonville	209,166	199,735
Louisville	64,945	321,550
Memphis	244,335	281,765
Montgomery	8,964	26,040
New Orleans	232,181	143,445
Norfolk, Va.	45,566	60,740
Oklahoma	171,150	127,025
Richmond	111,624	359,566
Savannah	43,900	96,590
San Antonio	178,300	207,245
Tampa	21,500	117,985
Washington	1,038,480	1,192,778
Wilmington	416,923	188,411

The extreme Western cities show the smallest loss of any of the four zones reporting, the figures being 5.98 per cent.

CITIES IN EXTREME WESTERN STATES

	August, 1917	August, 1916
Berkeley, Cal.	\$134,000	\$120,475
Colorado Springs	18,980	30,981
Denver	518,350	261,950
Los Angeles	891,485	1,037,320
Oakland	388,159	416,810
Pasadena	103,057	263,705
Portland	54,610	64,765
Pueblo	19,530	30,945
Sacramento	352,228	252,630
San Diego	116,439	71,673
Salt Lake City	101,850	277,828
San Francisco	1,217,691	993,020
San Jose	21,385	24,897
Seattle	464,765	668,764
Stockton	54,485	86,390
Tacoma	39,880	180,675

BUILDING AGE

THE DEALER'S DEPARTMENT

Annoying Practices in the Lumber Trade

Tell your Troubles in This Department Concerning Unethical Shipments by Lumbermen

Wholesalers Are Also Invited to Counter with Recitals of Unethical Actions of Retailers

By C. E. DAVIDSON

NONE of us care to admit our wrongs or errors. It is an unpleasant subject. It results in the opprobrium, "kicker," "knocker," etc., yet, criticism applied in the proper spirit is wholesome for all of us.

Ever since I became interested in the lumber business some twelve years ago, I have had recurring instances of unethical shipments from wholesale lumber dealers—not, mind you, from what would be termed unreliable mills, but from some of the largest in the country, whose managers would be terribly "miffed," no doubt, if charged with unethical shipments.

These results are no doubt due to the circumstances and surroundings of the business. Or is it habit, indifference, lackadaisical business methods, lack of integrity in making shipments, lack of a perfect co-ordination of the sales, the order, and the shipping departments? Personally I think it is due to a lack of perfect system and understanding between the salesman, who promises, and the mill, which delivers.

At the outset I want to say that in all the years I have been connected with the lumber business we have never had one "kick" to make to a cypress concern. Every piece comes perfectly manufactured, up to grade, and just the quantity ordered. The yellow pine manufacturers are about the worst sinners of all of them, with

the Douglas fir people not far behind, and my purpose is to see, if by proceeding without malice, without undue or unwarranted charges of any kind,

I cannot gather a volume of such transgressions and by presenting these to the manufacturers at their next annual, the subject cannot be taken up and the matter mutually remedied. I am aware there are some scamps in the camps of the retailers. We retailers are perfectly willing to discipline them through our associations. We simply want the facts, only facts, no exaggerations, but an earnest desire to ferret out the difficulties involved and correct them.

My idea is to ask every lumberman who reads this to sit down and send me a report on any shipment in which he was mistreated either through grades, or loading heavily on some undesirable length, etc.

I will not publish in BUILDING AGE the names of the concerns, but in your report I want the names, the number of the car, if convenient, the approximate date, and briefly, first, a statement as to what was ordered, second, what you received, and third, the approximate loss to you.

Make it brief, but full enough that

the facts can be gleaned. These will be compiled by me and forwarded to the wholesale association for their information. If names are desired to be withheld, so state and they will not be disclosed.

WANTED—The name and address of a dealer who has not had any experiences of the annoying kind Mr. Davidson describes in this article. You want what you want when you want it, of course—but do you get it? Here is a practical suggestion for the elimination of one of the most serious problems of the retail buyer, through the development of a better understanding between the manufacturers and the dealers.

In the great majority of cases, no question of honesty is involved; the trouble is caused by lack of understanding. In the few instances where either party to a sale is wilfully unfair, co-operation affords no remedy.

Tell your troubles to Mr. Davidson.

I have no malicious purpose in undertaking this task, but only desire to correct an evil for which there can be no excuse. There is no good reason why the lumber business should be conducted on a loose and in some instances almost dishonest basis.

Examples of Unethical Actions

In order that the reader may have some idea of the material and facts desired, I will give an instance or two which has occurred with us:

Car SAAP, No. 1381.

Ordered a car of 8, 9 and 10 foot car siding, six inches wide.

Car came loaded as follows: 21,636 feet of 9 foot, 1184 feet of 8 foot, 140 feet of 10 foot.

We had failed to specify lengths; in this we were technically at fault. The mill saw this and took advantage of us to load off onto us some \$500 worth of undesirable lumber. Now, that mill knows that a nine-foot length is not suitable for either a 16-in. or a 24-in. joist—the material being used largely for flooring for barns, sheds, etc. Also for siding. Farmers do not build sheds nine feet high, but build them eight, ten, etc.

Details of One of Them

One more instance: A year or so back we ordered a car of shingles, then in transit, Aug. 25. Car was reported at Minnesota Transfer Sept. 3. Did not receive car until Dec. 1. Firm insisted they had shipped car, had it billed to us and could not be held responsible for railroad delays. I went to some expense and ascertained this car had arrived at the Transfer, as claimed, had been unloaded and piled with other shingles, that the car itself, on Sept. 5, empty returned to the coast. Another car was not provided until late in November, and it is altogether probable we never did receive the shingles actually bought. Loss of trade and disappointment of customers, and the buying of other shingles was made necessary. Shingles were on the decline that summer and fall, and the result was invoiced shingles Jan. 1 at a loss, having several cars on hand.

Where the Error Occurred

The error here was in not telling us the car was unloaded at the Transfer, and, in short, acquainting us with the actual facts instead of writing letter after letter concealing the facts. We refused to pay for the car until it was received, notwithstanding the terms, and was threatened with suit.

Send me your complaints and I will carefully compile them and present them to the wholesale associations for their consideration. It will help. I know that the manufacturers' associations are desirous of helping the trade, as evidenced by the Southern Pine Association's action last year in inviting representative retailers to New Orleans to assist in revising the grading rules, etc.

Don't wait to send in your reports, but do it now. Send to C. E. Davidson, Greenville, Ill.

Economy of Motor Trucks for Haulage

Much has been said about the economic factor in the use of motor trucks as opposed to animal transportation, but little has been shown in the way of specific instances where savings have been wrought through the use of the power wagon.

In an investigation conducted by the Federal Motor Truck Company at Bennington, Vt., it was found that H. W. Meyers & Son, dealers in coal and feed, have been effecting a saving of \$11 a day in employing a two-ton Federal truck for making their deliveries.

This information was gained through accurate records of horse and truck operations covering a period of six months. It was further shown by these records that the Federal two-ton truck had performed 350 per cent more work than any of the firm's teams on the same type of deliveries. This has been accomplished at an additional cost of but 20 per cent over the expense of two horses.

A Few Details of Cost

Taking these figures as a basis a two-ton truck performs the work of 3½ teams. The cost of the horses is figured at \$178.13 a month, or \$5.93 per day. Three and a half teams would cost \$20.77 per day. The monthly cost of truck operation is put at \$213.17 or \$7.10 per day. Even including the wages of a helper on the truck this form of transportation would be \$11 a day cheaper than by the use of teams for the same work.

Figures submitted by the American Woolen Company show that this concern was enabled to cut its delivery costs considerably through the substitution of motor power for horses. Horse haulage costs this company \$.70 per ton compared with an average of \$.34 per ton for motor haulage, a saving of fifty per cent. These figures, however, do not include costs of depreciation, insurance or interest. By adding these costs to the motor truck operation alone, the power vehicle will still show a saving of \$.12 per ton.

What a Horse Consumes

Extensive research among teamsters and municipal experts show that each heavy draft horse consumes 5½ tons of hay and 180 bushels of oats every year. Continuing along this line of investigation, the number of acres required to feed each horse was determined. The amount of grain this would grow and the number of loaves of bread that could be produced from the flour thus obtained were also shown. It was a notable fact that the elimination of the horse as an element in commercial haulage would effect a great economy in the conduct of the world's business besides marking a distinct forward step in the advancement of our industrial life.

A publicity campaign to stimulate building operations regardless of the present prices of materials and the general retrenchment policies of individuals on account of the war is about being launched by the building trades of Louisville, Ky.

Getting Your Building Materials Business Into Motion Pictures

The Stock "Ad" Film—Making Your Own "Movies"—Some Interesting Figures of Cost

By ERNEST A. DENCH

THE stock slide is popular because it is cheap. It does not look cheap, however, which is equally as important. To the public it appears that you have spared no pains or expense to present an artistic and attractive announcement, and so they are favorably impressed.

But the slide has one shortcoming—it does not move. It is a serious defect because spectators, save for the brief intermission, have a succession of rapidly moving pictures passed before their eyes. In the entertainment field the stereopticon lecture has given way to the motion picture, and advertising at the photoplay theater is passing through the same stage of development, although there will always be a legitimate place for the slide on the screen. The building materials dealer should follow in the steps of the national advertiser and employ advertising films. But not on the same extensive scale. A national advertiser thinks nothing of having a one-reel subject, taking about fifteen minutes to run off, produced at a cost of from \$1,500 to \$3,000. Unless it is done on a large scale motion picture producing is costly. The more theaters in which a film can be shown, the less the cost of production. But the building materials dealer is necessarily limited to one or more of the local theaters.

Length of "Film" Desirable

You want a film which will occupy the screen for the same duration as the slide, but no longer. From forty to sixty feet is just about right, and to have a subject of this length produced to conform with your individual requirements would cost about 50 cents a foot. If you have been accustomed to paying from 35 cents to a dollar for the stock slide, the outlay is enough to frighten you away, but the stock film has been made a practical possibility, bringing the advertising film within reach of every building materials dealer, large or small.

Those motion picture advertising producers which are making a specialty of this effective form

of advertising have not confined themselves to one particular kind of production—they have taken their cue from the regular motion picture producers, aiming at variety and novelty and adopting their methods on a miniature scale. The average stock film costs from \$4 to \$5.

Here is a scheme of advertising a business which should appeal to the popular taste. Moving pictures are all the rage at present, and there is no reason why the dealer in building materials should not utilize them in showing the public just what he is doing in a business way. The plan should prove helpful in securing additional contracts for materials and at the same time increase his profits. The initial cost is not prohibitive and the results of a judicious campaign should demonstrate the wisdom of the scheme outlined by the author.

Perhaps the most popular and least expensive is the animated cartoon. A clever subject employed by one building materials dealer showed an ocean liner which is chased by a submarine and finally torpedoed. The explosion sends letters scattering in all directions, after which they arrange themselves into the advertisement. Then the steamer disappears below the surface.

Another pictured such articles as boards, laths, bricks, shingles, lime and sacks of cement flying about on the screen. They form themselves into a house out of

which letters appear forming the "ad."

The stock film certainly costs more than the stock slide, but audiences evince greater interest in the former because it offers genuine entertainment without the advertising element forcing itself to the front.

Have Your Own "News" Film

The live photoplay exhibitor is deeply conscious of the fact that the national animated newspaper has its shortcomings, especially if he is located in a small town. Folks in Clayville are not so interested in Van Troopen laying a foundation stone in New York City as they are in John Brown opening the Clayville library. Maybe some local manufacturer has had an addition made to his plant and you have supplied some of the building materials. Here you have an event with a legitimate news interest. In putting over the press agency stunt you would have the exhibitor send a cameraman around to cover the event. But that would not benefit you any. The theater man, as likely as not, would leave your premises out of his calculation, and for you to profit thereby it would be necessary to have a few feet of film showing the building materials leaving

your establishment or arriving at the plant. So, to put this stunt over you must defray the cost of it. Some exhibitors have their own cameras; others hire a local cinematographer; but the arrangements in either case practically amount to the same. A useful and not too expensive length is 50 ft.

If Mrs. Brown, the well-known suffragist, sent you a testimonial in regard to the garage she had built, the first thing that would occur to you would be to have the letter flashed upon the screen. That's far too crude. But you can film an interview with your worthy customer and introduce some intimate scenes, not to forget the visualized testimonial. This would produce an exquisite blend of entertainment and advertising.

Action Should Tell the Story

All in all, it is action by which you have to tell your story. A whole mass of explanatory matter tagged onto the film hinders it instead of adding further enlightenment, as is intended. The fewer and shorter the sub-titles are the better the picture will be. There are plenty of other places in which to display how well you can weave words, so why drag them into a place where they do not fit? Besides, it is what the spectator sees, not reads, that leaves the lasting impression, which is the paramount point to be reached in motion picture advertising. Moreover, each word used means 1 ft. of film.

The motion picture photographer usually charges 50 cents a foot for producing films along the foregoing lines. By offering the exhibitor a news event film he will gladly snap it up as a special attraction. And such publicity as you will receive will not be forgotten in a day.

Why Not a Miniature Photoplay?

The advertising film writer has arrived. And none too soon. He brings with him the training acquired in writing photoplays for purely entertainment purposes. To this he has added the knack of injecting the right proportion of selling talk into an interesting story, a combination which ably equips him for his job.

Suppose you have a short photoplay written around your building materials business. You either leave all the details in the hands of an industrial producer, paying him accordingly, or else hire a regular photoplay author. In the latter event you only pay for the story in synopsis form, because only the producer can prepare a perfect technical scenario, unless, of course, the writer is attached to the staff and is acquainted with the studio facilities.

Anyone who has had a scenario produced can tell of the liberties taken with it by the director. Some of these alterations are justified; some are not. It depends entirely on the director. He may have such a conceited idea of his own importance that everything which does not correspond with his views is wrong.

Method of Procedure

I would be sorry to see such a condition come to pass in the advertising film field, so whenever you

have a local film produced agree on the story, and then if it is at all necessary to alter it afterwards ask the director for his reasons for so doing. If they are sound ones, he will be able to give them, in which case you can sanction your approval. Being on the inside, I have seen the publicity properties of many a commercial film impaired because of unnecessary changes on the part of the director, so giving him a free hand without personal supervision is not to be recommended.

The cost of producing a photoplay varies from \$1 to \$3 a foot. Steer clear of interior scenes, as they are expensive. A photoplay may seem costly, but it is not, for it is always available and possesses exceptional business-pulling properties.

Making Your Own Movies

It has been rightly claimed that the motion picture is a permanent advertisement, but that, like most other things, is apt to become stale and out of date through constant repetition. Not a few advertisers have had a big splash at motion picture advertising and have then retired. Far better had they concentrated on a library of short subjects and thus kept up to date; the cost would have been no greater, if as much.

Invariably outside assistance has been called in, but this has been found to have its advantages. How convenient it is to take your own movies, or else entrust the work to some competent person you know to take advantage of the opportunities as they occur. It is cheaper, too, in the long run.

The cost of a reliable camera for all-round work varies from \$35 to \$110. The purchase of the right camera at the beginning is very important, and from a comparison of those designed for amateur use I would recommend the "Alamo" as being the best. It holds but 50 ft. of film, thereby reducing the possibility of negative waste to a minimum, weighs but five pounds against a hundred-pound professional model, while the lens is satisfactory under all conditions.

Cost of Films

Raw film, both negative and positive, is obtainable in reels of 100, 200 and 400 ft., at 3¾ cents a foot. A motion picture film has to survive so much wear and tear at the hands of different theater operators that, in order to preserve a perfect appearance as long as possible it should be printed upon a reliable stock. Most of the regular producers use Eastman, so it is best to specify this particular kind.

The motion picture camera only differs from the ordinary camera in that machinery controls the shutter. By turning the crank, the shutter opens and closes in turn. At each turn of the crank eight frames, each of which is 1 in. wide and ¾ in. in height, are exposed.

As the standard speed is sixteen "frames" a second, the crank must not be turned more than twice a second. With watch in hand, it is easy to adjust this speed, and also to know how much film has been consumed. Unless this detail is attended to from start to finish, there will be a decided

jerkiness in the result. The knack of obtaining an evenly balanced scene is to watch the view-finder while turning the crank.

For taking interior scenes, where the light is probably not strong enough for photographic purposes, the Panchrome arc lamp cannot be excelled. The lamp, which may be rented or purchased outright, contains two arcs which require 15 amperes at 100 volts, giving forth 8,000 candle-power. The lamp is easily connected, as it is self-contained, with collapsible reflector, necessary resistance wires, etc., and produces a varied range of colors and shadows.

Now let us go into the cost aspects. Going on the assumption that the first effort totals 250 ft., or a one-quarter reel, and this has taken one day to produce, the production expenses should be about as follows:

Camera man, at \$8 a day.....	\$8
Raw negative stock.....	10
Raw positive stock.....	8
Developing and printing.....	15
Camera	50
Incidentals	15
	<hr/>
	\$106

Were you to obtain an estimate from the industrial producer covering an industrialog of the same

length he would probably quote \$100, yet \$6 more includes the initial outlay. It is therefore easy to perceive that after you have produced several pictures a considerable saving is effected.

Developing is best entrusted to one of the many plants having the proper facilities for doing this work. Usually 5½ cents a foot is charged for positives and ½ cent for negatives. Any titles—explanatory matter—that you may wish to use will cost you 5 cents a foot.

Getting the Circulation

The negative, we will say, costs \$100, with \$8 additional for every print. Now, if you intend having your film shown simultaneously at a number of theaters, it means that you will have to supply one print for each. As the picture will only be retained for several days, it is extremely doubtful whether the expense will be justified, so it is best to utilize but one print over a given territory. The life of a print depends on the care taken by the operator—it may only last three weeks in a serviceable condition or it may be excellent after six months in use.

A quarter reel picture occupies the screen for four or five minutes, and the exhibitor charges from \$2.50 to \$10 a week for screening. A motion picture film, I admit, represents a substantial outlay, but it is a worth-while investment.

Locating a Retail Building Material Plant

BY L. R. PUTMAN

THERE has been more science injected into the business of merchandising during the past twenty years than there was during the full two hundred years preceding Luck is an obsolete word

so far as success or failure is concerned. A definite reason can and is applied to every rise or fall of any business enterprise.

Elbert Hubbard spoke the truth when he made a statement to the effect that the public will make a beaten path to the door of any man who can do a thing better than any one else, although that man's house may be in the woods. But, there is always some one to dispute the title of supremacy. For that reason even if a man can excel in any pursuit or the manufacture of any article, nowadays he isn't satisfied to leave it to the public to create the demand or the desire for the result of his labors.

The location of his place of business is the first important question which confronts a man who has the money and the desire to sell building materials

Here is a discussion of one of the fundamental problems of building material merchandising that smashes a lot of moldy tradition. Perhaps it has a bearing on the possibilities of your business. Anyhow, it will be worth your while to read it—to attempt to apply it to your own situation.

at retail. There was a time when the supply was so limited and the demand so great that it was left to the buyer to be the aggressor. Not so to-day; the man who attempts to wait for business to come to him

unsolicited will wait in vain.

Soliciting, or in other words, advertising, may be done in a great many different ways. Some of the best and most effective advertising in the world is done in properly locating a place of business. On one or more occasions I have heard it suggested that some of the best known five- and ten-cent stores do very little advertising such as buying newspaper space and other ordinary forms of publicity. As a matter of fact these stores do spend large sums of money in the usual ways of advertising, but in the first place they are willing to make any outlay of money necessary to secure the very best location in any city in which they have sufficient confidence to make an investment. At different times the owners of these small-price stores have been known to re-

fuse to open stores in certain cities until they were able to secure the locations which the proprietors believed to be the most desirable. When these particular choice locations have been determined upon, the price to be paid for them is of secondary consideration.

Choosing a Site

Long before negotiations for a location are begun a careful survey is made by experts. Every advantage is considered. The commercial value of space in any community, great or small, is determined by its accessibility to the public. Then, the future tendency of the growth of the town with relation to the location under consideration must be kept in mind. Centers of trade shift with the growth and development of the town. As a rule these five- and ten-cent stores or any other of the most prosperous retail stores will be found where the greatest number of people are known to pass. The usual manner of determining the value of a retail location is to base it upon the number of people who walk past it

"The location of his place of business is the FIRST important question that confronts a man who has the money and the desire to sell building materials at retail!" In other words, the fact that a railroad siding can be had at a certain point "down in the hollow" or "over on the other side of the tracks" is no reason at all for locating your yard in that absurdly inaccessible place. So reasons Mr. Putman out of a wealth of successful experience as a retail lumberman.

in a given time. Naturally, the more people who walk in front of a man's store, the more opportunities that man has of making sales.

The First Requirement of Success

The first requirement is to have the customers pass your doors; the next is to have them enter, and the next, to have them buy. The most that advertising can do so far as the store is concerned is to bring the people to it. The business thus secured depends largely upon the selling force.

Now, with a retail building material business such a location as is usually selected by the owner of a five- and ten-cent store is entirely out of the question. Building materials, and especially lumber, are very bulky. It is impossible for the customers to carry the goods home, and it is unnecessary and impractical to display the goods as are displayed novelties, notions or even clothing, which are sold finished and ready for use. With these things in view, the price of the location for a retail building material store or yard depends upon the volume of trade which it is estimated the business will command.

Leasing vs. Owning Property

Some concerns think it advisable to rent or to lease a location rather than to own and to improve

the property. Leasing seems to be more common in the West because of the reason that the future of a great many new towns is indeterminate, and in some instances towns which begin with flattering prospects in a few years fell away in business and brought the owners of real estate loss in values. This condition has caused the reduction in the number of lumber yards in a great many towns. During the boom times of some of the new towns, particularly in Oklahoma, as many as twenty lumber yards prospered for years, while to-day five or six of them find it very hard to show dividends equal to the regular rate of interest.

Foundation of All Prosperity

In a general way the prosperity of any community depends largely upon the agricultural interests surrounding it. No prosperity can be more solid or dependable than that which comes from a good, rich soil tilled by an energetic class of farmers. Which town in that section prospers most, depends upon the class of merchants attracted to the different towns. Some towns lay dormant and refuse to grow while others nearby flourish and spread out. A careful investigation will usually show that the foresight and co-operative energy of the merchants in the prosperous towns has attracted a desirable class of citizens.

Neighbors Cannot Be Ignored

Some merchants imagine that they can be successful regardless of their neighbors. That is a great mistake. A few business failures in any town soon reflect results in the business of all the other concerns. Business men are truly their brothers' keepers. It is to the interests of every merchant that every other merchant is a good merchant. Business is naturally attracted to the best merchant and the more good merchants in any town the more business is to be had in that town.

I have seen the personnel of the business men change in a town, and with the change of men came a change in the prosperity of the town.

Business Is Built on Confidence

Business is built upon confidence, and a few merchants who fail to get the confidence of the people injure the whole commercial atmosphere of the community. This is most forcibly brought out by a bank failure in a community. It is a well-known fact that immediately after a bank failure the confidence of the people in banks is weakened and they begin to hide their savings about their homes, rather than to risk putting their money in the banks. Bankers know this and it is the custom for bankers to go to great extremes rather than have a bank failure in the neighborhood. It would be poor judgment to open a building material business in a town where the merchants are poor merchants or where the citizens do not have confidence in the local institutions.

Another mistake is made by some merchants in not taking a true estimate of the volume of busi-

ness any town will support. It is much better judgment to pay a premium for a concern already established than to go into a community on a cheaper basis, but where the volume of trade will not justify the increased investment and overhead expense. Too many lumber yards in a town are a hindrance to the town. If they are losing money the business of the town is hurt. If they make money they must charge unreasonably high prices for their goods.

A building material plant or lumber yard of today in a fairly good sized town represents a very

Before establishing a store the United Cigar Stores Company has an accurate count of the number of pedestrians passing the proposed site. If the traffic is heavy enough the store will pay. The same principle is followed in selecting sites for Childs' restaurants. And these two concerns are merely a little better known than thousands of other retail business houses that are capitalizing ACCESSIBILITY. Why should any merchant HIDE and expect prospective customers to seek him?

much greater investment than it did fifteen or twenty years ago. That is the case even if nothing but the same lines are carried; but the lumber dealer of to-day is not satisfied to sell nothing but lumber or wood products as he formerly did. He finds that his selling expense is but little more after he has equipped his stock to handle the complete material bill for most any sort of a building.

A-Lumber Yard Is a Department Store

On this hypothesis the modern lumber yard is not simply a place where wood products are kept but a department store where may be found every kind of building material. In most cases where the business is in the hands of a real merchant, this kind of store is more convenient and attractive to the contractor or builder of a new house than the old fashioned one and the plan of buying part from one merchant and part from another. Some of the talking points are that the bill is all figured in one estimate, that the account is all kept on one set of books, that the delivering is cheaper where it is done by the merchant and more convenient than where done by the purchaser. The modern system is more in keeping with the present idea of conservation and efficiency. It causes much less lost motion.

Arrangement of Modern vs. Old Building Material Plant

The modern building material plant requires a different arrangement of buildings and equipment from the old. Something more than a lumber shed is required. Some of the up-to-date lumber yards

are beautifully arranged and kept. Show windows, show cases and display racks are to be found nowadays in most every lumber yard; the most modern addition is known as a "service department." In this room or department are kept samples of practically everything the dealer sells. Many sales are made in this way which would not otherwise be thought of by the customer. An attractive mantle can often be added to the lumber bill if it is in sight and the customer or his wife sees it neatly displayed in the service room. A great many suggestions and much information can be brought forcibly to the attention of a prospective purchaser by properly arranging a service room. To the ordinary home-builder a blueprint or a picture does not mean nearly so much as the real object itself.

The drawing or the picture of a door or a china closet or a colonnade does not have the effect or make the impression or create the desire to buy as do these things themselves when tastily and properly displayed.

The Part Being Taken by the Women

The present political situation should conclusively prove to the minds of all men who handle building materials that the women folks are taking an active hand in the affairs of the world to-day more than ever before. It is quite often the case that the building of a new home is left largely in the hands of its mistress. There are several good and practical reasons for such an arrangement. In the first place, the woman does or should spend more time in the house than her husband. It is her duty and most always her pleasure to keep the inside of the home in order. She is usually a closer observer in such matters and nearly always has better taste than her husband. Another mighty good reason, from the husband's standpoint, is that he will not have to go to bed and to get up listening to the disagreeable phrase "I told you so!"

How much business is your community capable of producing for you? Have you ever attempted a careful analysis? Could you help your Commercial Club bring some new industries to your town? Are you doing your part in all such community welfare work? It pays to remember that you can not always collect your dividends the same day you make your investment. Industries bring people who require dwellings for which you can sell the material. Are you doing the necessary promotion work?

Then there is the omnipresent and conclusive reason why the woman should have the last say about the home and that is "just because." For these various and sundry reasons, as well as several others, the women should be considered in the final location of a building material plant in an ordinary town.

Some Suggestions for the Dealer's Homecraft Department

How Short Length Lumber Can Be Utilized to Advantage

BY W. S. WILKIN

The drawings and descriptive particulars which are herewith presented relate to several articles which almost any carpenter should be able to make with very little trouble. Fig. 1 represents the front view of a neat lawn seat, while Fig. 2 is a section and Fig. 3 a part plan.

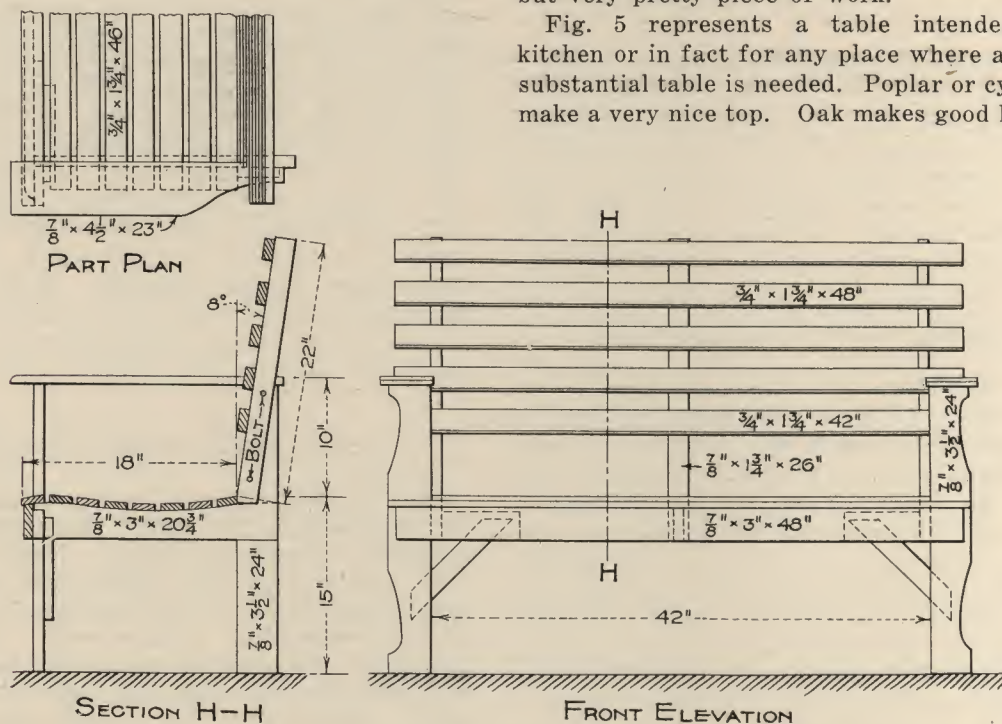
It will be seen that there is nothing in this seat thicker than $\frac{7}{8}$ in., so that it can be made from boards and all nailed together with the exception of the back of the seat, which is fastened on to the back legs by means of four $\frac{1}{4}$ -in. bolts.

If made from pine or cypress, the seat and back

slats help to carry the weight. The seat may be made anywhere from 36 in. to 56 in. long and the back may be from 20 in. to 28 in. high. If the mechanic has no hand saw or jig saw, the seat may be flat. Braces to the front legs will stiffen the seat and keep it from racking. In doing work of this kind, one can often use a few sound knots or little worm holes and they will not show much after the work is painted.

In Fig. 4 is represented something that can be made from scraps of lumber and is very convenient to serve as a rest for a flower pot. It can be made from either hard or soft wood according to convenience. Halve the two cross pieces together, screw the legs on with round-head blued screws and stain it dark. The result is a cheap, but very pretty piece of work.

Fig. 5 represents a table intended for the kitchen or in fact for any place where a plain but substantial table is needed. Poplar or cypress will make a very nice top. Oak makes good legs on ac-



Figs. 1, 2 and 3—Various Details of a Convenient Seat for the Lawn—Scale $\frac{3}{4}$ in. to the Foot

slats should be about $\frac{7}{8}$ in., but there are often short pieces of 2 x 4 or 2 x 6 in. oak about 4 ft. or 5 ft. long from which these slats can be ripped. If they are made of oak, $\frac{3}{4}$ in. or even $\frac{5}{8}$ in. is thick enough for that.

The seat should be reinforced about every 20 in. or 24 in. to keep the slats from springing, as shown. In this way the front piece and the back

count of holding screws well. A table like this can be made any size to suit the owner, but the standard height for a table is about 30 in. If casters are used on the legs, the latter must be made shorter. I have shown this table 2 x 3 ft. 6 in. which affords the reader a good idea of the proportion of the width to the length.

It will be noted that the underside boards are

only about 1½ in. from the side while they are about 2½ in. from the end. If you get too far from the sides, the top will be easier to split off and then it might curl up a little at the edges. Some time ago we made a table like this, 43 in. wide to fit up to another table. It was 6 ft. long and we used 4 in. boards around the legs. The legs were 2⅝ in. at the top and tapered to 1½ in. We made a cypress top and oak legs with ball bearing casters.

Fig. 6 shows how we fastened the top in place. With a gauge we cut out a place in the rail boards and run the screw up into the top, then put several screws across the end to hold the top flat but they need not be so close together on the side.

Fig. 7 shows a good method of fastening to the legs. It will be seen that the side board is cut out at the end and the end board fits into this which makes a stiffer joint than the miter or a plain butt joint.

Fig. 8 shows how to taper the legs. Take the board *a* and make *c-d* equal the amount you want to take off the bottom of the leg. Make *c-e* equal the distance from the bottom of the leg to the top of the taper, then rip off the board on the line *d-e* and nail the block *f* on to stop the leg. The leg is shown in place with the rip at *b*. Place the

Cutting Bills for

Lawn Seat							Paint
Pieces	Thick-ness	Width	LENGTH		Grade	Kind of Wood	
			Ft.	In.			
4	¾	3½	2	0	Good	Oak	Legs, band saw.
2	3	..	20¾	.....	.....	Seat end.
1	1	5½	Com.	Any kind	Center.
1	3	4	0	Good	Oak	Front.
2	4½	1	11	.....	.....	Arms, band saw.
1	1¾	2	1½	.....	.....	Center back.
2	1	11	.....	.....	Ends for back.
2	2	1	0	.....	.....	Braces.
2	2½	..	7	Com.	Any kind	Blocks.
1	¾	1¾	4	1	Good	Oak	Front seat slat.
4	4	0	.....	.....	Back slats.
7	3	10	.....	.....	Seat.
1	3	6	.....	.....	Back.

Flower Stand							Stain
1	¾	10	..	10	No. 1	Y. Pine	Top.
4	.....	2	1	6	.....	.....	Legs.
2	.....	2	..	10	.....	.....	Cross braces.

Kitchen Table							Paint
1	.....	24	3	6	No. 1	Cyp.	Table top, glue up.
2	.....	3	3	1	.....	.....	Side rails.
2	.....	.....	1	9	.....	.....	End.
4	2	2	2	5	.....	Oak	Legs, taper.

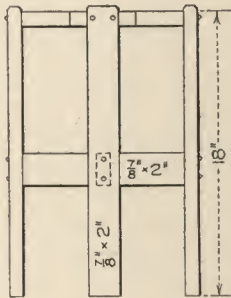


Fig. 4—Stand for Flower Pot—Scale 1 In. to the Foot

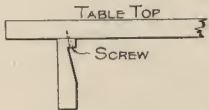


Fig. 6—Showing How Table Top is Fastened

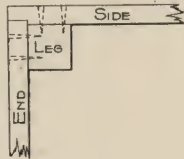


Fig. 7—Method of Fastening the Legs

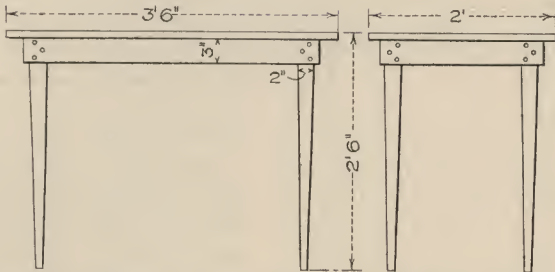


Fig. 5—Side and End Elevations of Kitchen Table—Scale ½ in. to the Foot

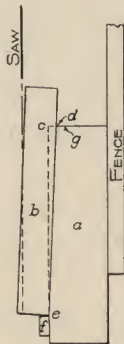


Fig. 8—Method of Tapering the Legs

Details of Various Articles Utilizing Short Length Lumber

top of the leg toward the saw and move the fence back till the saw will start in at the right place, then push the board and all through. Taper two sides this way, keeping the straight side of the leg against the board. Then make a new board by cutting off just twice as much as you did from this, or re-cut this by making *d-g* equal to *c-d* and rip from *g-e*, then taper the other two sides of the legs, keeping the tapered sides next to the board this time.

In Fig. 9 is shown a substantial little stool which can be made of short lengths of lumber and

Small Heavy Stool							Paint
1	1⅞	9	1	0	Good	Poplar	Top.
2	1⅞	8½	..	7	.....	.....	Legs.
2	⅞	2½	1	0	.....	.....	Sides.

Book and Paper Rack							Stain and Varnish
2	⅞	13	3	1	No. 1	Oak	Band saw, can be glued up.
1	⅞	12	2	6	.....	.....	Paper shelf.
1	⅞	5⅞	2	6	.....	.....	Book rack.
1	⅞	5	2	6	.....	.....	.....
1	⅞	3	2	6	.....	.....	Top tie.
2	⅞	4	..	7½	.....	.....	Braces.

is just the thing to have around the house to stand on to reach the top shelf or to fix the stove pipe or to sit on to clean the shelves in the sideboard, etc. The children can use this roughly and not

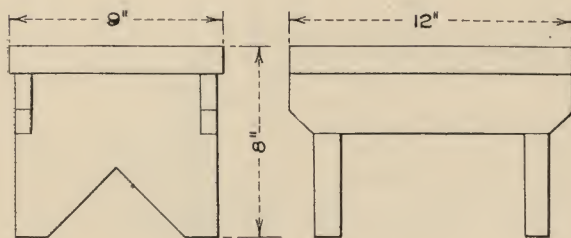


Fig. 9—End and side views of heavy stool—Scale $1\frac{1}{2}$ in. to the foot

break it. I have one that my grandfather made for me about thirty-five years ago and it is just as good to-day as it was then. I have made several for children. It is better to use $1\frac{1}{8}$ in. or heavier for the top and legs and about $\frac{3}{4}$ in. for the side boards.

This same pattern makes a good wash bench, only it should be built about 20 in. high and 18 in. wide and 24 in. to 26 in. for one tub or 48 in. to 52 in. long for two tubs. In building the stand $\frac{7}{8}$ -in. lumber is sufficiently thick.

In Fig. 10 is shown a very simple but rather odd book rack with paper shelf underneath. The books are put in with the bottom end and open edge down, making the back of the book with the title where they can be easily seen. If the rack is not full, the book can be opened in the rack and it is in a convenient position to read it if one is sitting in a low chair. For this kind of work cherry, walnut, chestnut, pine, ash and oak can

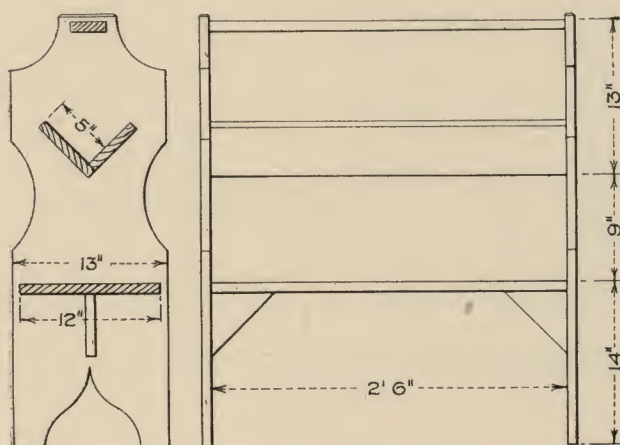


Fig. 10—A convenient book and paper rack—Scale $\frac{3}{4}$ -in. to the foot

be used. For pine and oak I think a dark oak stain with Mission or early English finish. We have used two different kinds of wood in the same article, say a black walnut top and cherry legs with very good results.

The above is the cutting bill for the five articles shown in the drawings accompanying this article. The arrangement makes what I consider a very

good form for a cutting bill. The headings and lines can be printed if any one is doing enough work of this kind to justify the expense in getting them out in this shape. The bill gives about the net length. If you are billing for some one else to cut from it, the best plan is to bill the material from $\frac{1}{2}$ in. to 1 in. longer so as to give room to square up, etc. The cutter will usually make allowance in the width when it is to be glued up. When there is no detail you can often make little sketches on the bill that will help explain what you want.

Where I have marked "Paint," "Stain," "Oak," "Poplar," etc., on the bill it is merely as a suggestion just to show how they can be marked on the bill to help the cutter when the mechanic is not cutting the work himself.

Building Materials for Europe

Many reasons are assigned as a cause for the present high cost of building materials of all kinds but a most cogent one is undoubtedly the options which have been taken on vast amounts of supplies by interests who plan to ship millions of dollars worth of building materials to Europe just as soon as the war is brought to an end.

It is stated that some of the interested companies are sufficiently well equipped to take orders for factory buildings as large as 90 by 300 ft., and to supply in the same shipment enough dwellings to house the necessary hands to operate the mills. Inquiries have been sent here from England, Russia and France, seeking to ascertain the cost per cubic foot of American standard shaped industrial buildings and quickly assembled houses for the employees.

According to the specifications received from France "prices must include complete mill construction, ready for setting machinery on floors within thirty days from arrival of material on site, quotations to be free on board, New York, and cover purchaser into the summer of 1918."

One New York company is said to have already made shipments of houses of this sort into South America, and is taking on capacity to meet the requirements of an export business in all kinds of basic building materials which seems sure to develop upon the closing of hostilities.

According to W. J. Haynen, production officer of the Emergency Fleet Corporation, 375,000,000 to 400,000,000 ft. of Southern yellow pine timbers will be needed within the next twelve months to complete the wooden shipbuilding program of the Government. It is stated that yellow-pine manufacturers are now cutting and shipping between 500,000 and 600,000 ft. of ship timbers daily, but this is little more than half the requirement. As a result of the scarcity of materials at present arriving at shipbuilding points, many yards are said to be wholly or partially idle. Two hundred and fifty wooden hulls are under construction.

Relations Existing Between the Dealer and the Building Contractor

Telling How Both Dealer and Contractor Can Make Money—Bunch All Deliveries

BY "THE OLD RETAILER"

THE retail dealer may often have occasion to think of the contractor as the old country bachelor did of the women folks: "We can't get along with them, but we can't get along without them." And it is so that both of these factors are essential in the building business, for, to a considerable degree, they depend one on the other. Therefore, it would seem in accordance with common sense that whatever might be discordant in their relations should be harmonized as nearly as possible. Both live in the same town and both are directly interested in the same business. What injures one injures the other; and, likewise, what helps the one benefits the other. These truths are obvious, but, like others of similar character in human relations, they are ignored or forgotten under the influence of individual selfishness.

The most successful dealers are those who have the contractors working with them instead of having their influence exerted against them. Even the tricky and unreliable contractor will give his preference to the dealer who gives him a square deal, though the dealer may watch him and hold him strictly to his agreed obligations. This dealer's prices may not be the lowest, but he gives the quality and service—and to a contractor service means more than it does to any other class of lumber buyer, for he is, so to speak, an every-day customer, while the rest of the dealer's customers are only occasional buyers.

If the contractor be of the reliable class, he should be considered and treated as a preferred customer. This preference, however, should not be permitted to pass the bounds of legitimate service. The contractor should be made to understand that this does not include the giving of excessive rebates or unlimited credit and freedom to pay his bills when he pleases. Some contractors get the idea that because they are giving most of their business to a dealer, he is under obligations to let them do

as they please in the matter of credits. This leeway, if given them, frequently permits them to go beyond their depth, with unpleasant results to them as well as to the dealer. Moderation, therefore, in the preference given a good customer has the beneficial effect on saving him from financial trouble.

In this further discussion of the subject some strong points are brought out.

Among other things it is suggested that the contractor make few separate orders so that the dealer may bunch all deliveries and thus save time and trouble.

How both dealer and building contractor can make money.

Bringing dealer and contractor into closer relationship.

Various ways in which the dealer may be of real service to the building contractor.

Dealer should have a thorough understanding with small contractors before extending them credit.

All bills should be promptly paid when due.

When a contractor takes a job, he usually has a time limit wherein to complete it. It is necessary, therefore, that he shall have the co-operation of the dealer in preventing delay in the furnishing of material. The dealer should make an extra effort, if necessary, to see to it that the workmen on the job do not run out of material. This may be considered the business of the contractor, but the dealer's part is in delivering promptly when the stuff is ordered and thus assisting in keeping the work moving on the job. This is a part of good service which the contractor appreciates.

If the dealer has not all of the material for a bill in stock, he should be frank to tell this to the contractor and the time when he expects to have it in, so that the contractor may make his plans accordingly. It is a poor plan to sell a man what you haven't in stock and not to let him know it at the time, for it is liable to work him an injury that he won't forget when figuring on the next bill.

The contractor can co-operate with the dealer in many ways to mutual advantage. But it is up to the dealer to educate him in those ways that will accomplish such co-operation, for he is not liable to acquire them of his own volition.

In the matter of delivery, a contractor can save the dealer a good deal of unnecessary work and valuable time by making as few separate orders as possible. You all know what it is to get an order for quick delivery of a few pieces of stuff to a job and half an hour afterward to receive another order for a few boards or a couple of bunches of shingles for the same job. They want it at once,

but your teams are busy on other deliveries or the drayman is not to be had. So the urgent delivery has to wait; whereas, a little though on the part of the contractor would have included these two orders in one.

I have known of contractors placing the order for material to be sent to a repair job just about the time the workmen got there. Then the latter had to wait until they got the material before work could be commenced. At the wage rate of 70 cents an hour this was a loss to the contractor. The dealer had to bear the blame, of course, for poor service.

How Annoyances May Be Avoided

A good deal of this annoyance may be avoided if, as before mentioned, the dealer will take the pains to educate the contractor to place his orders so as to "bunch" the deliveries and to give him a reasonable time to get the material on the job. This gives an opportunity for the good service which each party wants to give or to receive.

I have spoken at another time about the small contractors and their liability to take work at such low figures as will not clear them on the job. They may be good workmen and do a satisfactory job for the owner; but sometimes they do not possess the business ability to figure and to carry on their work to the satisfaction of the dealers who are selling them the material for their jobs.

Service the Dealer Can Render the Contractor

Among this class of contractors are many who are honest, well-meaning men who want to pay their bills. And if a dealer is wise, he can make a choice of these men and render them a substantial service by co-operating with them in such a way that both will make money in these relations. It can be done in this manner: Choose the man who you know by experience is honest and intends to meet his bills; give him distinctly to understand that you are willing to give him credit to a certain limit on certain conditions. These conditions are that he shall not undertake a job for any man before he lets you know who the party is, so that you can look him up and find out if he is reliable. Also, to take no job unless at a fair, remunerative price; but he must consult you before taking the job, so that you can judge whether it is a fair price or not, and the terms on which it is taken. Further, that he must make payments for the material at the time he receives his money from the owner and must pay for all when the job is completed and settlement had with the party for whom he is doing the work.

A Combination for Profit

The idea of all this is a combination for profit for both. The dealer furnishes the material at fair prices. The cost of the bill being known to the contractor, he can get his prices for his work and percentage on other labor; and at the end he is not in debt for any of his material. Another thing: The greater part of the business these men do is repair jobs, and frequently no contract is made for the whole job. The work is done by the day but the

whole thing is under the superintendence of the contractor and he sees to buying the material as well as collecting the money.

Co-operation That Is Advantageous to the Dealer

It is obvious that such a scheme of co-operation can not be otherwise than advantageous to the dealer, who has in this way a practically non-competitive business. This plan is a practical one, and no mere theory, because the writer has been using it for many years. He picked out his men and trained them to do the things he has mentioned. They too found it was to their best interest and stuck to the requirements.

I want to emphasize this class of service, because it has more to do with bringing the dealer and his contractors into closer and more harmonious relations than anything else; for when a man sees that you are doing things in his interest he will reciprocate by working for your interests. In this it is essential that each is fair and square with the other.

Attitude of Some of the Smaller Contractors

Of course there are some among this class of small contractors who are unwilling to place themselves under these restrictions, and therefore it is not best to tie up with them. Sooner or later these men run themselves out of business and those that are working with the dealer will continue on and get the business because they become known as reliable men who do good work and pay their bills.

The foregoing has referred chiefly to the furnishing of lumber bills, but the majority of lumber dealers handle other building materials besides lumber and usually they are the only ones in town who carry such materials in stock. This brings the dealer into relation with other workmen in the building trades, and nearly every one of them contracts to furnish materials as well as to do the work. And like the small contracting carpenters, there is close competition among them for a job. Usually the quantity of material is small and where the jobs are infrequent the temptation is strong to collect the money and use it for personal needs. They, therefore, require close watching on the part of the dealer to prevent this. And when he finds a customer of this class doing this it is best to shut off giving him credit and require him to collect the money and pay for the material before it goes from the yard; or else get from him an order on the owner for the amount and have the owner accept it before the delivery.

Extending Credit to Them

In extending credit to these small contractors of uncertain stability it is always best to have an understanding with them that you will limit their credit to a certain amount and when that is reached they must collect their bills and pay up before getting any more. This is really doing them a service for these small jobbing mechanics are generally poor collectors because they fear it will injure their chances for work if they push for their money. This feeling is not confined to them, however; for it also

actuates the dealer himself to his attitude toward those owing him accounts.

Restricting Small Accounts

This policy of restricting small accounts will actually work to bring more business to the dealer, for this reason: If you permit one of them to go on and to get what he wants and to pay when he can, there comes a time when you think he has gone far enough and you get after him for a settlement. Then you find, perhaps, that he has collected most of what is owing him and appropriated it for his own living necessities. In pressing him for the account, he goes somewhere else for his material and you lose his trade. On the other hand, if you make him give you prompt settlements he will continue to give you his trade, because if treated well he has no particular incentive to go anywhere else.

Small Jobbers Should Be Encouraged

Any man whose business is worth having will soon realize the worth to him of your insisting on settlement promptly, as he collects for his jobs. These small jobbers in the trades are worth looking after and cultivating for their business, for it is not only what they buy of you but also the value of their good will and influence that counts. For every man has his own circle of influence, be it large or small.

One Way in Which Dealer is of Service to the Builder

Another thing in the way of being of service to the contractor is the furnishing of a separate room in the lumber yard office for him to use in drawing his plans and making his estimates. A set of drafting instruments and paper, with other things in the line of stationery, may be furnished for his convenience, together with a collection of architectural plans and reference books. I don't think it best, either, to limit the use of this room wholly to the customers of the yard. A wiser policy would be to make it free for all the mechanics in town to use if they want it. The chances are that it would be used mostly by the yard's customers, but making it free to all would remove the charge of favoritism. There is no question but that a service of this kind will tend to create sort of a partnership feeling between the dealer and the contractors who trade with him, for the inference will be drawn that he is taking an interest in their welfare and desires to help them in their business, to assist them to obtain a better knowledge of it.

Effect of the Service Rendered

Every item of good service has its reciprocating effect and in this case it would operate on each contractor to be less frequent with complaints and more liberal regarding exactions. This idea of a contractors' room has been put into practice by a number of dealers throughout the country who are progressive enough to realize the business value of co-operating with the contractors. They understand the psychology of being accommodating and furnishing helpful service to a class of men whose

interests are inseparable from their own, and mention is made of it here for the purpose of inducing others to follow their example; for, as has been proved with them, it will go far in solving the contractor problem. It should always be remembered that service begets service and is a good breeder of values.

Attitude in Regard to Giving Discounts

The matter of giving discounts to contractors has always been one of dispute, not only between them and the dealers but also with the dealers themselves. The contractors claim that it is due them because of their being in the building trades and also because they are more continuous patrons of the yard than any other customers. Some go so far as to claim that a discount is their legitimate right and demand it accordingly and will resent any attempt at withholding it.

As a matter of theory, they are doubtless warranted in believing they are entitled to discounts. This is recognized by building material men in most of the larger cities and places where the greater part of building is done on contract. Generally there is a basic price list and the contractors are given a dollar off this list and a 2 per cent discount on their bills, besides, if paid promptly on a certain date. Some of the country dealers also are giving this or a larger discount to their prompt-paying contractors.

Dealers Averse to Giving Cash Bonus

But the majority of dealers in the country are averse to paying anything in the nature of a cash bonus to anyone for their trade. They argue that in carrying the contractors on their books and virtually furnishing them capital to carry on their businesses, they are doing all they can afford to do.

Another thing: Bills are figured for contractors very often down to a small margin above cost in order to make the sale. But of this the contractor is ignorant. All the same, he thinks he ought to have a discount when he settles for the bill. He does not understand that the dealer gave it at the time of the estimate.

New Use for the Motor Truck

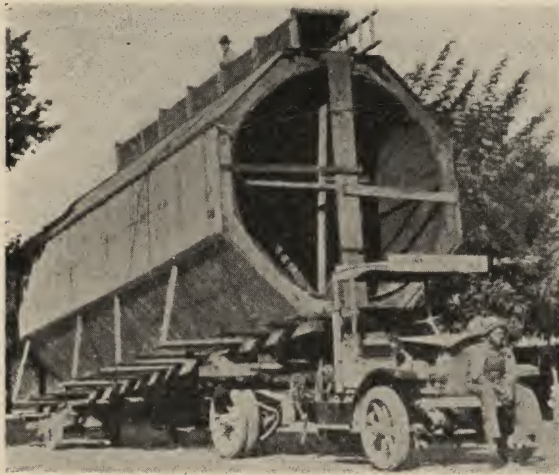
Times have changed somewhat since grandfather drove out to the saw mill with a yoke of oxen and consumed two days in hauling in enough boards to build a 12 x 12-ft. henhouse. In these days he can order it by telephone, load it on a truck the next day with several conscientious, egg-laying fowls inside, and by the time he reaches home very likely find enough fresh eggs inside to pay for the gasoline used on both trips, says a writer in a recent issue of the *Wood Worker*.

People are just beginning to learn what automobile trucks can do, and, judging by what is being accomplished at the present time, it would be either a very rash or poorly informed man who would make a positive statement as to what they can't do. Glance at the accompanying picture, for instance,

and you will get an idea of the uses they are putting the truck to out in California.

The Tuolumne Lumber Co. of Modesta, Cal., is engaged in the manufacture of silos, and as they can be built much cheaper and easier at the plant than to transport the lumber and put it together on the customer's premises, the company naturally turned to the gasoline motor as a means of transportation. In this case one of the silos was gently tipped over on the backbone of a specially prepared gasoline buggy, a few chains wrapped around its circumference to keep it from blowing away, a lookout stationed on top to lift telephone and electric wires over the periscope—and the truck disappeared over the rim of the horizon.

Somewhere out in the country the farmer who had ordered it the day before, was already fretting because of the delay in delivery. He was about ready to step into his limousine for a trip to the city when the silo came slithering up in a cloud of dust, was backed up to the foundation, slid off



Delivering silos by means of motor trucks

and the roof clapped on—and the chauffeur was off to deliver another one before dinner.

That's the way they are doing things out in California. The silo shown is 10 ft. in diameter, 35 ft. high and weighs approximately nine tons. It was moved on a White three-ton truck.

Another "Forest" Regiment Authorized

The formation of a second "Forest" regiment, comprising ten battalions and made up of lumbermen and woodworkers, who will go to France for the purpose of getting out of the forest such materials as the American, French and British armies may require, has been authorized by the War Department. Two battalions are to be raised at once with the active aid of the Forest Service of the Department of Agriculture, and it is expected that the eight remaining battalions will be called for in a short time. Nine "service" battalions made up of laborers who will be used in connection with the forest regiment have also been authorized.

In order to provide for future contingencies, it

was then decided to commission at the present time enough officers for the other battalions yet to be raised. According to the present plan, 50 per cent of the officers will be saw mill and logging operators. 25 per cent will be technical foresters, and .25 per cent will be men of military training.

Each of the ten battalions of the second regiment will comprise three companies of 250 men each and will be under the command of its own major. Skilled lumberjacks, portable mill operators, tie cutters, logging teamsters, camp cooks, millwrights and charcoal burners are among the classes of men desired.

The first regiment of woodsmen numbering about 1200 men and designated as the Tenth Engineers (Forest) has already been recruited to its full strength. It is nicknamed the "Lumber Jack Regiment" and will be employed in getting out material for army use. The regiment will take with it both stationary and portable saw mills with everything necessary for logging and saw-mill work and for transporting the products.

Collecting Old Accounts

One collection letter is always reserved by our concern until every other means has failed, states a writer in *System*. In each instance that it has been used by us it has followed several statements, notices, collection letters, and promises to turn the account over to an attorney.

In all but one instance a check has come back immediately from this letter:

"Just why you have not favored us with your remittance covering your account is not quite clear to us, and your reason for not doing so may be of such a personal nature that it is none of our business. But we would appreciate learning *when* you expect to send us your check."

Quick Handling of Lumber in the Mill

From log to lumber is a rapid transformation after the log is fished from the pond, hauled up the log slip and thrown on the skid, off which it rolls on to the carriage, where it is turned into correct position by the "steam nigger," fastened on the carriage, and cut into shape and form for use by the big saws, of which there are three kinds, band, circular, and gang, a process which requires but a few minutes. Half an hour later the lumber is in the dry kiln, or, if timbers have been cut, they are waiting on the timber docks, ready for loading on freight cars.

Reports received at the offices of the Southern Pine Association show that a majority of mills are now handling the Government's war business on a six-day schedule. This is, within a week from the time a Government order is received, the trees have been cut from the forest, hauled to the mill, manufactured, kild-dried if necessary, placed on freight cars and delivered to points of destination.

“WITH reference to the fear that has been expressed in some quarters that there will be a scarcity of lumber for building purposes, I have not been able to find any basis for this in fact. It is true the mills are turning out less than their normal output. Some estimate the curtailment at 25 per cent, and some go as high as 33½ per cent. This is due to weather conditions and to the scarcity of efficient labor. Even should this curtailment of output continue, however, there ought to still be sufficient lumber to satisfy all requirements.

“Temporarily the mills are busy getting the lumber out for the Government work, but this rush will be over within 30 to 60 days, after which lumber can resume its normal course and will be available for general building purposes. In addition to this fact, the lumber going into the Government work is almost entirely of the lowest merchantable grades, such as box and culls, leaving for commercial consumption all of the better grades. For ordinary building purposes there is required a large percentage of No. 1, No. 2 and No. 3 lumber, so that even at present there is plenty of this available. The principal trouble now, and no doubt the one that has created the impression of a lumber shortage, is the fact that the railroads are placing cars only for shipments on Government contracts, thereby depriving the mills of the ability to ship to general dealers and consumers. This, of course, will be relieved after the Government’s requirements are satisfied.

“I think, therefore, looking the situation over, that you can safely assure your readers that there will be an ample supply of lumber. If the railroads can get it to market there ought to be no difficulty in architects, builders and consumers getting all the lumber they need.”—W. B. ROPER, Secretary-Treasurer, The North Carolina Pine Association.

The Lumber Situation and the Government’s Requirements

No Shortage Probable—Transportation the Big Problem—Production Ample for All Needs

SO widespread has been the publicity given the Government’s unusual requirements for lumber for cantonment and ship construction that the general public is assuming the existence of a lumber famine and the impression is almost universally prevalent that lumber prices have advanced to a prohibitive point. These are misapprehensions which the ordinary consumer has no means of analyzing and disproving. He does not know, for example, that the lumber industry of the United States, with its present mill equipment, is capable of producing far more lumber than there is a market for in any normal time, and that this potential over-production has long been the adverse factor that has kept lumber prices close to the actual cost of production.

Shortly after the Federal Trade Commission came into existence, it conducted an investigation of the lumber manufacturing industries of the United States, that investigation having been requested by the manufacturers themselves. The Commission found a heavy excess sawmill capacity over that needed to meet the country’s actual requirements, and it was demonstrated also in that investigation that lumber was being sold at and even below the cost of production, with heavy financial loss to large numbers of timber owners and manufacturers.

This excess of sawmill capacity under present extraordinary conditions can be turned to good account for the benefit of the whole country, and doubtless will be as soon as the railroads are able to take care of the lumber tonnage offered them. Thus far, it has been quite impossible for most of the larger manufacturing plants, particularly in the South and on the Pacific Coast, to operate to the limit of their capacity, because cars have not been obtainable in which to move the product. One large Southern producing company cut the operating time of its plant several months ago because it had 100,000,000 ft. of lumber in pile and no room for a further accumulation. That company has not yet resumed normal operation because it is not getting sufficient cars to enable it to ship as much lumber as it is able to cut, but will gladly put its plant on a full time basis as soon as the railroads can move the output. This case is typical of the predicament in which large numbers of manufacturers of lumber have found themselves in recent months. They are exerting themselves to the utmost to meet the requirements of the Government and the latter is providing cars to take care of the lumber they are cutting for its use. But they could manufacture more material and meet the requirements of ordinary buyers to a much more satisfactory extent if they could get the necessary railroad service.

From all parts of the lumber producing area of the United States come reports of improvement in railroad efficiency, and a material increase in the volume of cars obtainable for lumber loading, so it is not unreasonable to assume that after shipments to the cantonments and camps shall have been completed, there will be plenty of lumber obtainable for ordinary purposes and at reasonable prices.

Despite the widely prevalent idea to the contrary, it is a fact that lumber prices have not advanced as steadily as most other commodity values, and when conditions in the lumber industry before the war are taken into account, it becomes apparent that the increased cost of lumber is not entirely

"SOME SPECTACULAR figures have been published as to the quantity of lumber the Government will buy for purposes of national defence, and some of these orders, of course, are very large. But after all the total governmental requirements are not likely to exceed 5 per cent of the yearly lumber production of the country. The farmer is the big lumber buyer, and at no time has he been in such a good position to buy the material he needs to build granaries, implement sheds, barns and all other improvements. Figures just published by the United States Department of Agriculture show that the average price of grain on the farm is exactly double what it was at this time last year, while there has been no such increase in the price of the lumber which the farmer wishes to buy. The manager of a number of retail lumber yards in Minnesota and the Dakotas has recently made some striking comparisons of this sort. The advertisements which he is placing in the country newspapers based upon going prices for farm products and for lumber at those points show that while in 1914 it required 33 hogs to buy the material for a seven-room house, the same material can be purchased now for the price of 18 hogs, and that while three years ago it took 703 bushels of wheat to buy a 32 x 56 ft. barn, this same barn can now be purchased for 351 bushels of wheat."—From the Monthly Bulletin of the National Lumber Manufacturers' Association.

due to the war but is in some measure chargeable to a process of economic adjustment that was inevitable, war or no war. For one thing, wages in the lumber industry were due to advance, regardless of hostilities abroad, and the lumber industry has for some time been face to face with the necessity of reducing the length of its working day. Labor in the wood and sawmills is far from the eight-hour goal, but it is gradually getting away from the eleven-hour day of a few years ago, and there is no doubt that further reductions in the hours of labor in this field are to be expected.

IF THE consumer had the facts in his possession he would see the improbability of any worth-waiting-for slump in building material prices. Why not put these facts before him in your advertising?

The big items involved in the production of lumber and its distribution to the consumer are labor; railroad and sawmill equipment, machinery and

supplies; and transportation. As has been said, the cost of labor has increased, and without any likelihood that it will ever return to old levels. No one

IT IS an unbusinesslike if not a disloyal act, at a time like this, to make a practice of ordering or selling carload lots of building materials that do not amount to FULL CARLOADS. Load to 10 per cent above every car's marked capacity or until every foot of space is filled. Buy full carloads and insist on having them. Make every freight car carry its capacity load.

can honestly claim that present wage scales in this industry are too high. As to equipment, machinery and supplies which the lumber manufacturer must buy, every item has advanced tremendously in cost. His logging railroad requires locomotives and steel rails; his woods operations require steam logging machinery, saws, tools and camp supplies; his sawmills require machinery replacements and repairs, leather and rubber belting and packing, lubricating oils and greases, files, knives and miscellaneous tools and many other items. Here it will be seen that the price of steel is an important factor in the cost of producing lumber. Without steel in the form of machinery, railroad equipment, etc., lumber can not be manufactured, so in these respects the producing cost has increased heavily. As to the cost of freight, the railroads are constantly seeking to increase rates and while the advances in freight rates thus far have not been of material consequence in connection with the delivery of lumber to the consumer, there is no doubt that lumber rates are going higher as the railroads are able to make further demonstration of their need of larger revenues.

Another factor must be taken into account, too, that of the carrying charges on invested capital. The lumber producer who has acquired twenty or

IF YOU have not the most efficient and modern facilities for quick unloading of cars, make money for yourself and do a patriotic act in the bargain by investing in them. Cut out the slow manual handling operations and make quick-acting mechanical apparatus do the work wherever possible. Never before was there an occasion when TIME was so invaluable a national asset as now.

twenty-five years' supply of timber is paying taxes on it each year, and must charge up on his books the interest on his investment. The accumulation of taxes and interest must be added to the price of the product when it is offered for sale, and each year these items of cost are increased. This has been particularly true in the last few years, with a pronounced tendency on the part of the states which possess large areas of timber to add heavily to the burden of the timber owner by greatly increasing the rate of taxation on his holdings.

Careful analysis of these various factors contributing to the recent increases in lumber prices will reveal the fact that some, at least, of these factors are of permanent character and cannot be wiped out without bankrupting the industry.

A leading authority on price statistics, Roger W. Babson, in his advice to buyers for August, showed

estimated that there is on hand at the sawmills and in the hands of retail and wholesale dealers throughout the country a total of somewhere between 15,000,000 and 20,000,000 ft., so it will be readily seen that the Government's maximum possible requirements will not long stand in the way of the lumber industry furnishing all the material that will be

Don't detain a freight car! If you can't put it to work let the railroad pass it along to someone who can.

that on ninety-six leading commodities of American trade, the average advance in price, as of July 1, 1917, was 55 per cent over July 1, 1916, and 127 per cent over August 1, 1914. As of the same date, the advance in the price of lumber was 23 per cent over July 1, 1916, and 28 per cent over August 1, 1914. The same authority shows the following advances in price commodities covering the last three years: Lumber 28 per cent, cement 34 per cent, brick 80 per cent, iron 102 per cent, nails 158 per cent, steel 390 per cent.

A bushel of wheat or of any other grain will buy more lumber to-day than it would at any previous time in the last quarter of a century.

According to the National Lumber Manufacturers' Association, it is estimated that the total quantity of lumber required for national defense may amount to 2,000,000 ft. within the next year. This sounds like a very large quantity, but as a matter of fact it is only 5 per cent of the annual lumber production of the country and it is conservatively esti-

needed for normal building operations of the sort in which lumber is the largest factor, if the railroads can be induced to furnish the necessary equipment and to move the cars with reasonable rapidity when they are loaded.

On the Pacific Coast the labor situation is far from satisfactory and is causing heavy curtailment of production. With drastic governmental action against the disloyal activities of the Industrial Workers of the World it is to be expected that this difficulty will soon be entirely eliminated.

Undoubtedly it is true as to some of the minor factors that enter into the cost of building that prices are unduly inflated, as the direct outcome of war conditions. That fact does not apply as to lumber, however, and there is reason to believe that it will hold its present value indefinitely, and, even more than that, will advance in price to the consumer as the country gradually adjusts itself to war conditions and the volume of building shows the increase that now seems inevitable.

Impressions of a "Building Age" Traveler

What the President of an Eastern Pennsylvania Association of Dealers in Masons' Supplies Has to Say

I WROTE you from Lancaster last month. After mailing report of visits in Lancaster County I paid my hotel bill, expecting to come on to New York that afternoon. Much to my surprise, I found I had more money than was needed to get me home, and as I did not want to establish a precedent by turning back expense money, I decided to go on to Reading.

Inquiry developed the information that I could reach Reading by trolley or by using a branch of the Philadelphia & Reading Railroad, but as one of the objects of making this circuit was to use up extra expense money, and as the cost was a little greater by train, of course the railroad was the natural way to travel. After consulting the

time table and selecting the best train (there are two a day operating on the same running time) I started for the station.

When I bought my New York ticket I asked the agent if the train carried a diner, but he had never worked anywhere except on this branch line, so he didn't know what I meant. The food supply I found later was confined to milk—the loading and unloading of the milk cans at crossroad platforms preventing continuous slumber.

There was an advantage, however, in the frequent stops, as I was kept awake and could be on the lookout for lumber yards, though they were very few after we crossed the Berks County line. As a matter of fact, there are not very many yards

in Berks County outside of Reading; but Reading itself has some fine yards and is a good distributing point for all kinds of building supplies.

Dealers Handle More than Lumber

It is the exception, however, not only in Reading but throughout eastern Pennsylvania, for the retail lumber dealer to handle anything but lumber. Supplies for the mason are handled by what are known in the trade as "building material dealers." The hardware trade retails cement and distributes the bulk of the building specialties, roofings, plaster board, etc. Perhaps you knew this, but I just found it out and thought it worthy of mention.

The dealers in masons' supplies have an association in eastern Pennsylvania, of which George F. Erich of Allentown is president.

As I could not get a room at the Berkshire—Reading's one "best" hotel—I decided the next morning that Berks County didn't need any particular attention just at this time and went on to Allentown to see Mr. Erich.

An Enterprising Firm of Dealers

George F. Erich & Co. handle coal, mason materials and all kinds of building specialties. The general appearance of the yard and offices furnishes conclusive evidence that there is a real business man about the establishment; and as you walk into Mr. Erich's office you know instinctively who this man is. Mr. Erich was busy but received me courteously and listened attentively while I told him of the revised BUILDING AGE and what we hope to accomplish through it for the dealer. When I had finished my story he said:

"Yes, the dealers need that, all right; but there are two things in the way of its doing much good. The first is that they won't read it, and the second is that only a small percentage would appreciate the importance of it and benefit by it if they did read it. You evidently don't appreciate how hard it is to get these fellows interested.

Pennsylvania Association of Dealers in Mason's Supplies

"Our association has about three hundred members. We cover Pennsylvania east of Altoona and Delaware. There are approximately 1500 dealers in this territory. We have a membership of approximately 300. At our last meeting at Philadelphia we had three of the best speakers on three of the most important subjects affecting the dealers' profits. We sent out 1500 announcements and invitations to dealers to attend.

"Officers of the association and members of the executive committee wrote personal letters calling attention to this meeting and urging attendance. With all of this effort we had only eighty-two dealers present, and any one of these talks was worth five times what it would have cost any man from the most distant point to attend.

"Undoubtedly the industry needs just the things you mention. If these dealers could be brought to understand what it actually costs them to do

business, if they appreciated the importance of figuring overhead and turnovers and knew how to figure, there wouldn't be any trouble about prices. Price-cutting develops in almost every instance through failure on the part of the dealers to appreciate how much it costs to handle the material. Why, I will venture that not over 2 per cent of the dealers in this territory know how much it costs to handle and deliver a ton of cement.

President Often Called Upon to Unravel Tangles

"As president of this association, I am called in sometimes to help to straighten out tangles, and every time the trouble is due to a failure to apply simple business principles. We are doing all we can. This year we have a paid secretary who is spending his time out among the dealers in an effort to bring them to a more practical knowledge of these things; but they won't read. I wish every dealer in this territory would read and study along the lines you suggest, but I am afraid it will be several years before we can hope to bring them to that point."

I called upon other officials of the Building Material Dealers' Association of eastern Pennsylvania and found all of much the same opinion as Mr. Erich. But these men are taking hold of this problem in an intelligent, determined way and they will undoubtedly accomplish results in bringing about better conditions.

Southern Pine for Army Cantonments

In connection with the construction of the various army cantonments in the South, it is interesting to note that the Southern Pine industry is entitled to great credit for the part which it played in the success of the undertaking. Lumber was the one big item that had to be provided promptly and in large quantities and the Government early called on the pine industry with its tremendous resources to furnish the major portion of wood needed. The full amount of these requirements, approximately 200,000,000 ft. of Southern pine has gone into the construction of cantonments and smaller camps, to haul which there were required over 10,000 freight cars, or between 238 and 250 solid train loads of lumber. By means of the Southern Pine Emergency Distributing Organization, it was possible oftentimes for trains of lumber to be loaded and moving to destination point within six hours after the order had been received from Washington.

"Lumber Advances Least" is the title of an interesting booklet just issued from the offices of the Southern Pine Association, New Orleans, La. The booklet contains a graphic comparison of price variations in building materials covering a period of six years. As was expected, the figures show steel far in the lead of other materials in its climb skyward since 1912, with an advance of 148.5 per cent. Cement is up 55.5 per cent, brick 38.1 per cent, yellow pine and lumber 17.07 per cent.

As Seen By the Man on the Roof

Poems of Pessimism

(There are so many "Chirrup of Cheer for Each Day of the Year," and such other oodles of optimism printed nowadays that the Man on the Roof has decided to put over some "Poems of Pessimism and Glimmers of Gloom.")

I.—More

"When selling things," Dad used to tel
And tell me o'er and o'er,
"Give what is right, and then, as well,
Just give a little more—
Give every fellow that you sell
More than he bargained for."

I tried it. Here is what befell,
And why I'm sort of sore:
I give them service that is swell
In office, yard and store.
The more I give the more they yell—
They want a little more!

Worrying About It

The hardest work you ever do
Is worrying about it;
What makes an hour resemble two
Is worrying about it.
The time goes mighty slowly when
You sit and sigh and sigh again
And think of work ahead, and then
Keep worrying about it.

The hardest part of any job
Is worrying about it,
Your joy to kill, your rest to rob,
Is worrying about it.
The lowest spot to view a hill
Is from the bottom; higher still
It looks each moment that you kill
In worrying about it.

But, if you start to climb, you soon
Quit worrying about it,
Quit waiting, wishing for the moon
And worrying about it.
A human task just grows and grows
By putting off; time may disclose
'Twas easier than you suppose—
Quit worrying about it.

Just buckle up and buckle in—
Quit worrying about it.
By work, not worry, you will win—
Quit worrying about it.
A task is easy, once begun;
It has its labor and its fun;
So grab a hold and do it, son—
Quit worrying about it!

Cal, the Carpenter, Says:

You have to see right to saw right.
Some men express their disapproval and freight
their praise.

The largest room in many a house is the room for
improvement.

Some men never think of their hammer until they
are on the roof.

I like to lend a saw about as well as a barber likes
to lend a razor.

Some owners are like newspapers; they issue ex-
tras every few minutes.

There is a lot of satisfaction in talking back, and
mighty little money.

The wise father doesn't confine his efforts to
shingling a boy's hair.

Some men have religion for the same reason they
have putty—to cover their sins.

The man who is careless with his material isn't
likely to be careful with his work.

A man is like a scaffold; the higher he gets the
stronger he needs to be.

The time to talk religion to a man isn't when he
has just dropped a 2 x 8 on his foot.

Many a man spends his time painting the town
when what really needs it is his own house.

If we had to pull nails with our teeth we would be
more careful about starting them right.

When the wife bosses the building, you can gen-
erally figure who is going to boss the house.

Getting good work out of a careless carpenter is
like trying to drive a crooked nail.

The boss says he wishes he knew all that a town-
ship board doesn't about building a bridge.

Some people never think of fireproof until it is
time to furnish it to the insurance company.

Sometimes a fellow's boss is such a false alarm
that a man feels he is laboring under a delusion.

It is the work we leave undone and the things we
don't leave unsaid that get us into the most of our
trouble.

Don't be discouraged if you make an occasional
mistake; if men didn't there wouldn't need to be
any claw on a hammer.

You Just Can't Suit Some People

"You just can't suit some people."

"For instance?"

"Fellow had his house picked up by a cyclone
and landed over in another county without being
damaged."

"And yet?"

"And yet he was sore because it didn't land over
a cellar-hole."

Novel Method of Displaying Materials

Of decided value in the displaying of various samples of building materials is the method followed by a progressive firm in New York State. This concern believes that a customer can get a far better idea of the appearance of the material if it is seen installed than if it is shown only as an isolated piece. As the concern does quite a lot of house building, it evolved a plan which would help to demonstrate clearly to the lay mind as well as to the trade the merits of the product in which the customer might be interested.

An upstairs office was laid out as a place for the keeping of samples and catalogs of all kinds of materials. One wall was laid up with a wainscot of the various sized tile commonly used in bathrooms, the different sizes and styles being laid in individual panels which harmonized one with the other. Above this, wall board in variously arranged patterns was displayed. The other three walls carried out the same idea of displaying interior trim, brick, etc., so that they would convey, as nearly as possible, finished ideas. The floor was laid up in squares of various grades and kinds of flooring which the concern is pushing.

Glancing out of the window, a customer can see several large panels of stucco, each panel having a different color and finish. This has proved itself of decided help in introducing stucco colors, and has also afforded valuable data as to the way in which the various colors are affected by the elements.

Of course, considerable time and expense was devoted to securing this display, but the company feels that many sales, which otherwise would have been lost, have been clinched by this display room, the service being of decided value to prospective home builders as well as to building contractors.

The Farmhouse Improved

Under the above title a bulletin is being sent out by the Engineering Experiment Station of the Kansas State Agricultural College in co-operation with the National Lumber Manufacturers' Association which contains much interesting information. It is known as "Bulletin No. 7" and has been prepared by William A. Etherton. This is the first bulletin on farmhouses by the Engineering Experiment Station, and its purposes are first to answer collectively many questions which heretofore have had to be answered individually, and second, to give a first aid in building a new house or remodeling the old one. It may help the prospective builder to a better conception of the importance of the house problem, of its magnitude, its difficulties and its possibilities. The bulletin is in a way a book of reminders—not of all building items, but of many with which the layman needs first to be acquainted. It may help to avoid the dangers of pet ideas and notions which are often favored to the detriment of other items of equal or greater importance. Its third purpose is to help owners to know and to enable them better to explain their housing needs so

as to get from architects the kind and class of service which the importance of their problem demands. Again, it is to aid the reader in estimating the relative merits of houses and of house plans, also to provide for teachers who are in need of such help, a logical outline and a brief description of house building problems. Finally, it is to explain such general items about building as may well be omitted from future descriptions of house plans; in other words, to be introductory to succeeding bulletins on farmhouses. The bulletin is not a book of plans, although a few examples are shown primarily for the purpose of explaining the text. The text outlines the farmhouse problem in a very general way and without special regard for local conditions. This seems necessary to an impartial consideration of the many items of general importance that need carefully to be regarded.

A most pertinent statement is that "the house plan that is needed by the farm owner cannot often be found; it must be made."

Lumbermen Endorse "Building Age" Policy

The following letter from Paul S. Collier, secretary, The Retail Lumber Dealers' Association of the State of New York, will be read with interest by the trade at large:

"The stand which you take relative to the mail-order business in the July issue of the BUILDING AGE is to be heartily commended by the lumber trade as well as by the entire building trade. It is fundamentally in the direction of more economical distribution and is in accord with the principles of true community development. I sincerely trust that you will find your attitude on this question heartily approved and supported by those favorably affected. I shall bring this matter up for formal consideration at a future meeting of our board of directors."

Announcement is made of the appointment of Philip Lanier, of the firm of Foster & Lanier, New Orleans, La., as assistant to the director of the Southern Pine Emergency Bureau, succeeding A. J. Carroll, who severed his connection with the bureau on Sept. 1 to become general manager of the newly organized Gulfport Wholesale Lumber Company at Gulfport, Miss. Mr. Lanier brings to his new position long experience in many branches of the lumber industry having gained the rudiments of the business in North Louisiana and Eastern Texas. The firm of Foster & Lanier will be continued under the direction of Mr. Foster.

According to United States Consul, George A. Bucklin, at Bordeaux, France, immediate offers with catalogs are desired on demountable frame houses. He states that an extensive market is available.



Inside view showing doors closed. As they open inward, no snow or ice interfere. Doors swing into jamb against stops

MORE ROOM IN THE GARAGE

Your customers want all the room they can get in the garage. Most garage doors are continually in the way and take up unnecessary space, are hard to open and close and are never tight.

One of the most important qualifications of a garage door, is that it should be weathertight.

NATIONAL GARAGE DOOR SET

makes your doors always close snug and tight and you don't have to pull and tug at them to open.

THE NATIONAL is absolutely the easiest working garage door set, as there is no binding or friction. They are guaranteed to work freely.

Doors hung with these sets require but a minimum of space in opening, as they are hung on the inside and fold and slide against inner wall.

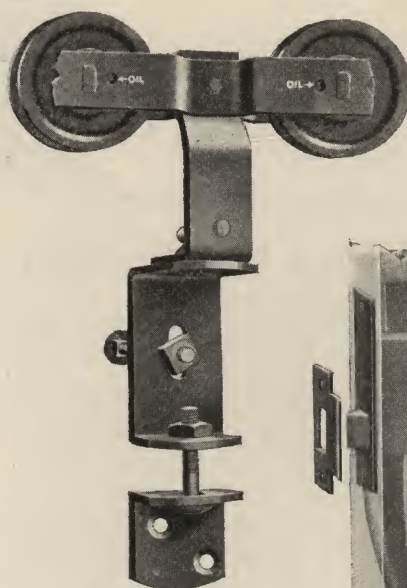
It is the cheapest and most substantial set you can offer your customer.

Hangers are adjustable in case of swelling or raising of cement floor. Adjustable feature prevents sagging of doors.

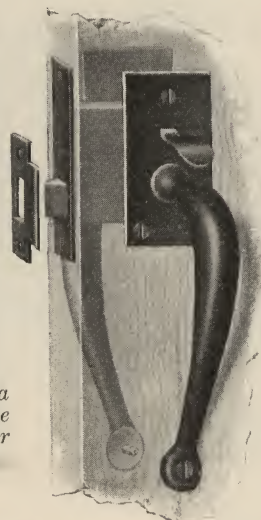
Other features too numerous to mention here.

Write for full particulars and give dealer's name.

National Mfg. Co.
Sterling, Ill.



The Hanger operates on a swivel and turns on the track without sticking or binding in any way



The No. 27 Latch has no complicated parts to get out of order



"Louis XVI Design" Fixture Set Originated and Distributed by the Eclipse Light Co.



For the Living Room and the Hall

The "Louis XVI Design" Fixture Set consists of the following 8 Fixtures:

7110	—4 light Dining Room, key sockets, Silver and Black....	List \$22.00
7116	—4 light Living Room, key sockets, Florentine Gold....	List 18.00
7103	—2 light Bed Room, 1 ley, 1 pull, Florentine Gold.....	List 7.50
7202G	—1 light Bed Room, pull socket, Florentine Gold	List 4.00
7104	—1 light Kitchen, pull socket, Ivory	List 3.50
7202N	—1 light Bath Room, pull socket Nickel	List 4.00
7197	—1 light Hall, pull socket, Florentine Gold.....	List 5.00
7199	—1 light Porch Receptacle, Verde Greene.....	List 3.50
		\$67.50

This set is wired complete, including glassware of same design, ready for hanging. Insulating joints included with all fixtures.

The Neatest Fixture Set placed on the market

Made in attractive finishes and of a heavier gauge metal than usual. These distinguishing features are notable of the "Louis XVI Design" fixture set:

1. Originality and attractiveness of design.
2. Superior quality metal and glassware.
3. Every fixture complete and ready for hanging.
4. Unprecedented low price.

Write for Pamphlet "B" describing this set in detail.

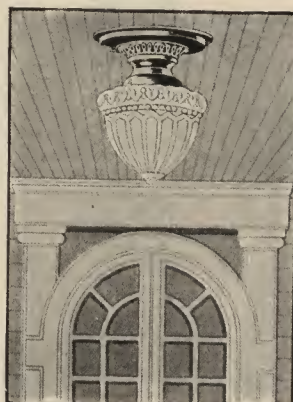


For the Dining Room and the Kitchen

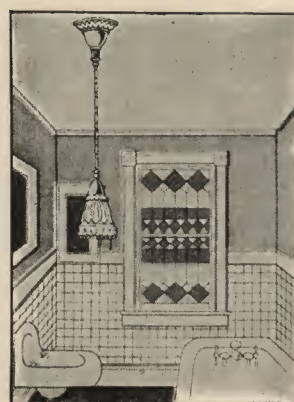
THIS FIXTURE SET, COMPLETE, \$33.75



For the Larger Bedroom



For the Porch



For the Bathroom



For the Bedroom

A large stock of these fixture sets on hand enable us to make immediate deliveries. Wire your order or write to

Eclipse Light Company, 583-587 Broadway, New York

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Please quote BUILDING AGE when writing to advertisers

Builders' Appliances and Equipment

Some Things of Special Interest to Those Having to do with the Various Branches of the Building Business

"Superior" Inside Corner Bead

A metal corner bead, which is intended to insure correct lines in plastered surfaces where wall meets wall or ceiling, has been brought out under the name "Superior" by the Milwaukee Corrugating Company, Milwaukee, Wis., and a general view of it is presented in



Fig. 1—The "Superior" Inside Corner Bead

Fig. 1. This inside corner bead furnishes grounds to which the mechanic can work, thus necessitating the application of an adequate coat of mortar over the lath and doing away with the common skimping of the mortar coat, especially from the jambs back to the inner angles of the walls. By reason of its construction this bead is said to take up in a large degree the strain of building settlements and the warping and shrinking of timbers, thus preventing the cracks often seen in the angles of a plastered room or radiating therefrom. This corner bead is made from galvanized open hearth sheets and is furnished in 5, 6, 7, 8, 9, 10 and 12 ft. lengths. The company states that for a small additional sum a clip is furnished so that either wing of the bead may be extended $1\frac{1}{2}$ in. so as to afford ample nailing room for joining of wood lath, metal lath or plaster block partitions on brick or tile walls. This construction, it is claimed, eliminates splintering or clipping.

The "New Era" Check Writer

The check writer has been demonstrated through practical experience to be one of the necessities of modern business. The unprotected check forms a ready field for the activities of the professional forger and many business men have lost considerable sums through the raising of their checks before check writers were brought into existence to combat this evil.

According to the Supreme Court, the maker of a check is obliged to use all due diligence in protecting it. The omission to use the most effectual protection against alteration (evidence of neglect) renders him responsible for the forged amount, the bank being only responsible for ordinary care in paying a check. The purport of this decision is that if the drawer of a check which has been altered and paid has neglected to use the most effectually known means to protect his check, he must stand the loss occasioned thereby.

It is for this reason that every well equipped office, whether it be that of the contracting builder or the lumber dealer or in whatever line may be the business engaged, should possess among its equipment an up-to-date device for protecting the checks which may be drawn. In a device of this nature visibility is an important factor, together with ease of operation, and

a machine so designed as to embody these among other features is the "New Era," illustrated in Fig. 2 and which has just been placed upon the market by the New Era Mfg. Company, 450 Fourth Avenue, New York City. In this machine every stroke of the lever produces a word and every word is instantly visible, thus reducing possibility of mistakes to a minimum. As regards operation a turn of the knob by the left hand finds the desired character quickly and accurately, while a slight movement of the right hand swings the macerating mechanism into play and the check is rapidly and perfectly written.

In the construction of the machine hundreds of little grinding, tearing teeth pulverize and macerate the paper into a cobweb of fibre. Through and through this weakened tissue is forced bright red, acid-proof and ineradicable ink, forming, as far as modern science and ingenuity can determine, an impregnable barrier against alteration. This, it is pointed out, is the reason why the "New Era" check protection covers the intent and meaning of the law. The front plate of the "New Era" check writer is made of brass, German silvered, and the frame and back plate are made of pressed steel highly enameled. The base is of a solid casting and the shelf is made of pressed steel, which is first copper-plated to prevent rusting and then nickel-



Fig. 2—Front View of the "New Era" Check Writer, Model No. 3, Showing the Dial with Pointer

plated. The check writer is very compact and simple in design, being easily handled and is guaranteed for a period of two years. It is known as the No. 3 model and is, we understand, a marked improvement over the No. 2 machine. The company has issued an attractively illustrated pamphlet giving full directions for operating the check writer, so that its merits can be readily and quickly appreciated.

Hollow Tile Makers' Association Establish a Building Code Department

The members of the building fraternity throughout the country will be interested in the statement that at the present time the Hollow Building Tile Association embraces in its membership sixty-five manufacturers representing 2,200,000 tons of material. In percentage it is about 90 per cent of the output of building tile and the association is organized along broad lines. As is well known, the use of all materials in the larger cities of the country is controlled by law and one of the most important problems confronting the tile association is building codes. In order to meet the requirements of the case, it has established a building code department in charge of a trained engineer and it is the intention to have him co-operate with Building Committees and Building Inspectors in all cities and states which are revising their building codes. He will also endeavor to have the code changed whenever it is unfair to the material of the association. The engineer in charge will also make investigations covering the fire-resistant qualities of tile and see that it is properly recognized by the underwriters and insurance companies. Another function will be the collection and distribution of various kinds of information of interest to members of the Tile Association.

Smith-Chicago Underslung Chain Drive Mixer

Building contractors and others making use of concrete mixers—and at the present time their number is almost legion—cannot fail to be interested in the new Underslung Chain Drive Concrete Mixer, which has just been placed upon the market by the T. L. Smith Company, 3120 Hadley Street, Milwaukee, Wis., and illustrations of which are presented herewith. As is well known, the chain drive is an old device for driving mixers, but in making use of it the method heretofore employed has been in one way only and that has been to have the chain encircle the drum. The new idea, as exemplified by the mixer in question, is to drive the drum from underneath only, as this allows the use of a shorter chain and the weight of the drum resting on the chain keeps the latter taut at all times. As there are only a few teeth which are in contact with the chain, there is said to be no chance for the chain to ride off of the teeth. In other words, the new arrangement eliminates two bad features of the ordinary chain drive—stretching and slipping of the chain and the loss of power due to the friction caused by the chain en-

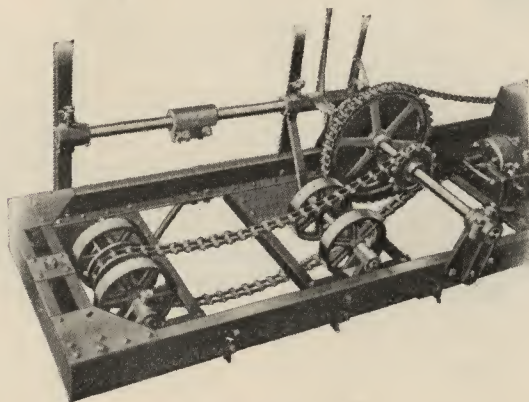


Fig. 3—Mechanism of the Underslung Chain Drive Concrete Mixer Made by the T. L. Smith Co.

circling the drum and being pulled together around the drum. This invention is said to be not merely a new "wrinkle," but a forward step in concrete mixer construction which will represent a big saving to the contractor who uses it. In Fig. 3 of the illustrations we present a view of the arrangement, which is shown so

clearly as to call for little additional comment. Another point embodied in the new mixer is the self-locking discharge chute which, while not perhaps so important as the underslung chain drive, is still worthy

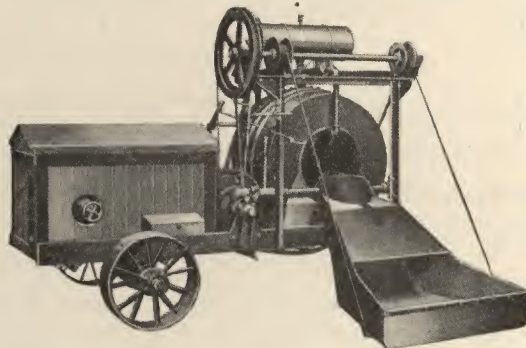


Fig. 4—The Smith-Chicago Mixer on Truck with Gasoline Engine, Power Loader and Water Tank

of more than passing mention. Contractors in general will probably appreciate the fact that on the ordinary mixer the weight of the concrete falling on that portion of the chute inside of the drum has a tendency to flip the chute. With the new device, the moment the chute is inserted into the drum, the toggles automatically lock and no matter how much weight is thrown onto the chute inside of the drum, it remains in its position until thrown out by the operator. In Fig. 4 is shown

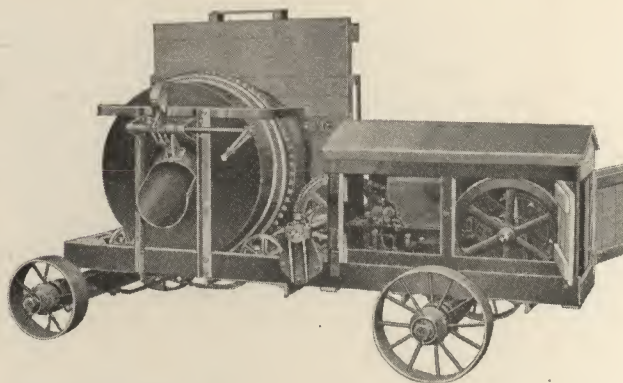


Fig. 5—The Mixer Mounted on Truck with Engine, Platform and Low-Feed Hopper

the Smith-Chicago mixer on truck with gasoline engine, power loader and water tank. The gasoline engine used on the mixer is built especially for the company by one of the largest engine concerns in the country and the company states that it takes full responsibility for every gasoline engine furnished on its mixers. In Fig. 5 is shown the No. 7-S Smith-Chicago low-charging mixer on truck with gasoline engine, platform and low feed hopper. This outfit is recommended by the company where the nature of the job requires a lighter machine of the simplest possible design. The loading platform is only 18 in. high and when the mixer is being moved the platform can be quickly removed or can be hooked up in a vertical position and thus be out of the way.

How Wall Board Met a National Emergency

Under the above title there has just been issued from the press by the Beaver Board Companies, 115 Beaver Road, Buffalo, N. Y., an attractive eight-page circular setting forth the merits of Beaver Board for a great variety of purposes. One page of the circular is devoted to a letter addressed to dealers handling Beaver Board and, among other things, it has this to say in

(Continued on page 22 of the Advertising Section)

Renovation with Stucco Good Business for You

MANY a man will "spruce up the old place" when he won't tear down and build over. Sometimes it is sentiment, sometimes economy.

Renovation can do a lot more than improve the looks of the house. Remodeling and overcoating with stucco make the walls fire resistant—lowering insurance premiums and increasing safety. It makes the home easier to heat in winter, cooler in summer. Lowers cost for repairing or repainting.

The *new color stucco* does wonderful things in color. Toned with exposed aggregates, such as marble and granite screenings, colored sand, gravel, etc., this stucco has a life, character, warmth and individuality not found in ordinary color stucco, and the color lasts.

*Use the coupon below for valuable information
about this new color stucco, remodeling, etc.*

The Atlas Portland Cement Company

Members of the Portland Cement Association

New York, Chicago, Phila., Boston, St. Louis, Minneapolis, Des Moines, Dayton, Savannah

Home remodeled with Atlas-White, Cairo, Ill.

J. I. Jenkins, Architect



ATLAS



WHITE

The Atlas Portland Cement Company,
30 Broad Street, New York, or Corn Exchange Bank Building, Chicago

Send me information and specifications on the new color stucco—also "New Homes for Old" and special information on the subjects checked:

☐ New Stucco Homes

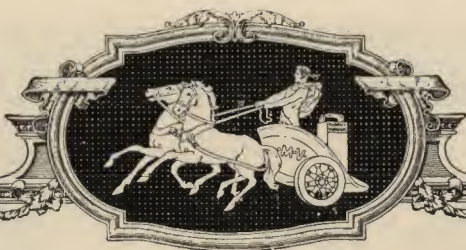
☐ Remodeling in Stucco

☐ Stucco Garages

☐ Stucco Bungalows

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Don't go against your grain

Even if your customer is holding you down to the minimum price on every item, you can have the kind of finish you believe in, the kind that will show your work at its best and keep it looking well.

Murphy Varnish

"the varnish that lasts longest"

produces a finish unequalled for beauty and durability and its fine working qualities so reduce the amount needed and the labor of applying that it costs no more than second-rate varnish.

Shall we send you information about our products?

Murphy Transparent Interior
Murphy Transparent Floor
Murphy Transparent Spar
Murphy Nogloss Interior
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Murphy Univernish
Murphy White Enamel
Murphy Enamel Undercoating

Murphy Varnish Company

Franklin Murphy, jr., President

Newark

Chicago

Dougall Varnish Company, Ltd., Montreal, Canadian Associate

A N A

(Continued from page 600 of the Editorial Section)

regard to the herculean task the Government is successfully accomplishing in building sixteen cantonments for the training of our new National Army:

"The army engineers chose wall board not simply because it was the quickest and easiest material to use, but especially because it meant permanent walls and ceilings that were sanitary and durable enough to withstand hard usage. No one wall board maker could fill the entire order and it was naturally allotted among several manufacturers."

The company states further in the letter that it had already planned to expend more money for advertising this fall than in any past season, when it received the Government's specifications for many million feet of Beaver Board. "It seemed to us," the company states, "that this use of wall board by the army was a most unusual indorsement of the general advantages of wall board—an indorsement that should be brought to the attention of the public. This Government indorsement of wall board is one that will make a strong and lasting impression on present and future builders," and it is the purpose of the circular in question to show the prospective customers what this indorsement means to the Beaver Board dealer. The company regards the present as a logical time for the lumber dealer to push this product and it is prepared to offer him a high grade of advertising service, in the way of electros of well prepared advertisements, etc. The company also places the service of the advertising department at the command of the dealer, not alone in connection with Beaver Board, but with any advertising that the dealer wishes to put out. Another Beaver Board service that can be used to good advantage this fall is the preparation of special designs and estimates by the Department of Design and Decoration which will prepare without charge any special design the dealer may be able to use. In addition, if the dealer will jot down the names of any persons whom he thinks can utilize wallboard in improving their property and send this list to the Sales Promotion Department, this organization will put the Beaver Board proposition before the dealer's prospect in a way which will tend to make all future efforts on the dealer's part easier and much more productive than would be without this service. Unsettled conditions in the building industry have made it necessary for the retail lumber dealer to advertise and obtain work in new directions if he expects his business to show a reasonable profit, and this service offered by the Beaver Board Companies points out the way to a good start.

How Contracts for Weatherstrips May Be Secured

Every carpenter-contractor and builder is interested in adding to his business and it has been suggested that among other things he could add weatherstripping as a side issue, making a special effort to secure contracts of this nature. The season is rapidly approaching when weatherstripping of windows and doors will be required and the enterprising carpenter and the builder will be the ones to secure work of this nature. The winter business will be principally in houses already occupied, but new buildings are easier to equip and are a better place for a new man to obtain practice. In this connection it is interesting to note the unique scheme which is being advocated by the Allmetal Weatherstrip Company, 224 West Madison Street, Chicago, Ill., for the purpose of securing weatherstrip contracts by putting the carpenter or the builder quickly in touch with interested prospects. Some special tools are needed for metal weatherstrip work and these the company has arranged to make in its own factory and furnish at actual cost. These tools are returnable at any time and the amount deposited will be refunded, less a reasonable deduction for overhauling if any be necessary. A set of models for demonstration pur-

(Continued on page 24)

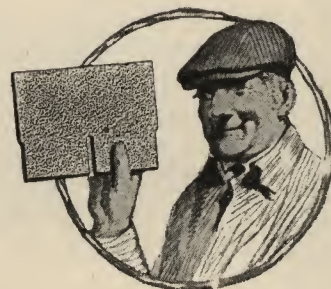


A Roofing Job That Lasts

A roof of Neponset Twin Shingles gives an old house a new lease on beauty and usefulness. But Neponset Twin Shingles have more than outward beauty to recommend them.

These famous shingles are made of such wear-resisting materials—tough, fibrous felt; layer upon layer of everlasting asphalt; crushed stone and slate—that permanence is of greater importance.

A roof of Neponset red or green shingles on any house, old or new, is a "drawing card" for any contractor, carpenter or builder. It is a demonstration of his good judgment as regards beauty and durability.



NEPONSET

TWIN

SHINGLES

(Patent applied for)

Neponset Twins are self-spacing. Their twin shape halves the cost of laying and requires 25% fewer nails. They cannot warp, dry out, rot, pull off, curl or blow away. And they are approved by the National Board of Fire Underwriters.

You can get your share of the roofing contracts in your section by mentioning Neponset Twin Shingles. Millions of people already know about "this roofing development of the twentieth century" by reading our advertisements in the national magazines.

Let us submit some interesting facts and figures about Neponset Twin Shingles. We'll send them merely for the asking, and without any obligation.



Look for this trademark on all Shingles, Roll Roofings, Wall Boards and Building Papers. There is one meeting every requirement and purse—all guaranteed by us.

BIRD & SON (Established 1795) **East Walpole, Mass.**
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 NEW YORK CHICAGO WASHINGTON Canadian Office and Plant, HAMILTON, ONTARIO

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Why Every Modern Kitchen Should Have a KOHLER Sink

KOHLER Sinks have the same quality distinctions that make KOHLER Bath Tubs and Lavatories first choice for the well planned home.

The designs have the hygienic features that are characteristic of all

KOHLER WARE

always of one quality—the highest

KOHLER Sinks are made for right and left-hand corners, and for open wall spaces. They have right, left or double sloping drain-boards, and are made without aprons.

"It's in the Kohler Enamel,"

The whiteness of the enamel is notable in all KOHLER products, each of which has our permanent trade-mark—a guarantee of its high quality.

Owing to manufacturing economies the prices of KOHLER WARE are not excessive.

KOHLER CO., Founded 1873 **Kohler, Wis.**

Boston New York Philadelphia Pittsburgh Detroit
Chicago Indianapolis St. Paul St. Louis Houston
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★ The KOHLER permanent trade-mark in faint blue appears on end of sink shown by star.



F-1003-A

poses will be loaned to the builder under the same conditions. The company has issued a series of pamphlets setting forth the plan in detail and copies will be sent to any reader of the BUILDING AGE who may be interested. One relates to the weatherstrip itself, telling how it is made, another gives directions for installing, while leaflets relate to the tools necessary for the purpose. The plan outlined offers the builder a nice, clean side line closely related to his own business, and if he pushes it, will not only make money for him, but very likely bring him in contact with new customers.

Stanley's Improved Chest Handles

Carpenters and building mechanics generally who are so fortunate as to possess a large "kit" of tools requiring a good sized chest to hold it, are likely to be interested in strong handles which will enable them to move the chest about or carry it short distances, taking a firm grip without cramping the hands. In order to meet the demands for a handle of this kind, the Stanley Works, New Britain, Conn., have brought out a wrought steel chest handle in 2½-in., 3¼-in., 4-in. and 5-in. sizes. This handle is furnished in the following




Fig. 6—The Stanley Improved Chest Handle

finishes: Japan, light bronze, antique copper, nickel and Stanley sherardized. The 3¼-in. size is especially adapted for use on mechanics' tool boxes and small chests and the company states that it is the first handle of this style and size to be made in wrought steel. In Fig. 6 we present a view of the handle and it is pictured so clearly that little description would seem to be necessary.

The Lighting Problem in the Home

The importance of the lighting problem in the home is being more and more recognized by the architect and the builder, and greater attention is being given to design than ever before. For many years past there has been a tendency among the designers of buildings to bring about a pleasing harmony between the architecture of the new home and the style of lighting fixture to be installed, and with the entrance of electricity as a necessity and not a luxury, this idea is rapidly growing. In keeping with this conception of what is necessary, large fixture concerns throughout the country are originating and distributing fixture sets which represent either certain historically noted periods or are uniform in design. In addition to securing the advantage of uniformity of design, the builder is usually able to realize a substantial saving on the purchase of each set due to the fact that he is buying a number of fixtures at the same time, which obviates the trouble of separate packing and does away with salesmen's expense because he knows just what to

(Continued on page 26)



KELLASTONE

IMPERISHABLE STUCCO

REDUCE BUILDING COSTS BY USING **KELLASTONE** MAGNESITE STUCCO

Cut the high cost of building materials, yet improve the quality by using Kellastone.

Build for permanence, yet at the same time increase the beauty—use Kellastone.

Build a home that is FIREPROOF and WATER-PROOF—no other stucco than Kellastone will accomplish this.

Kellastone Absolutely Will Not Freeze

If you are interested in learning about one of the greatest and most wonderful building materials in existence, the only stuccoing material in creation that may be termed **CRACK FREE**—

WRITE FOR BOOKLET No. 25, which tells about Kellastone—a remarkable MAGNESITE STUCCO.

THE NATIONAL - KELLASTONE CO.
1317 MALLERS BUILDING, CHICAGO ILL.



Fiberlic Wall Board

The material from which it is made, the fact that the pulp is *chemically cleansed* and that the *fibre lengths* give the finished product that *natural reinforcement* that is lacking in ground wood boards, is in itself a guarantee of the superiority of Fiberlic from *strong, permanent, economical and sanitary construction.*

MacAndrews & Forbes Company
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Factory: Camden, N. J.

Black Diamond File Works

ESTABLISHED 1863

INCORPORATED 1896



TWELVE MEDALS
of award at International Expositions

**SPECIAL PRIZE
GOLD MEDAL
AT ATLANTA, 1895**

Copy of Catalogue will be sent free to any interested file user upon application.

G. & H. Barnett Company
Philadelphia, Pa.

Owned and Operated by Nicholson File Company

expect when he orders the set. These sets are generally packed together in a carton and as the larger firms usually have a number of these in stock, they can make prompt delivery. One of the large Eastern concerns has recently conducted a campaign for popularizing what is known as its "Louis XVI Design" fixture set, the set consisting of eight fixtures which are intended to solve the lighting problem for any seven-room cottage. These fixture sets are completely wired and ready for hanging, and include glassware of the same design and insulating joints for all the fixtures. These sets are being offered by the Eclipse Light Company, 583 to 587 Broadway, New York City, which maintains a special Customers' Service Department for the purpose of facilitating quick shipments. In introducing this special set to the building trades the company allows a liberal discount on the list price, thus enabling the builder to become acquainted with its merchandise and at the same time enhance the beauty of the houses the builder may be constructing. We understand that this fixture set is to be followed by other combinations of fixtures so that in a short time the builder will be able to select from a series of sets that will cover almost every style of architecture. The company is distributing a dainty folder illustrated by numerous interiors in colors and showing the arrangement and effect of various designs of lighting fixtures which the concern manufactures.

New Use for Expanded Metal Lath

In laying up the ordinary hollow tile wall of buildings for stucco there always has been considerable waste of mortar which would drop into the tile. To prevent this waste and to guard against settlement cracks,

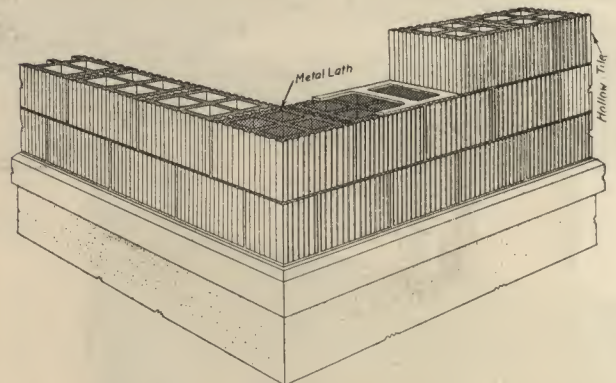


Fig. 7—Showing How Expanded Metal Lath Is Used to Prevent Waste of Mortar

strips of expanded metal lath are laid between each layer of tile before applying the mortar. This method is being recommended by leading tile manufacturers and by the Associated Metal Lath Manufacturers. The illustration, Fig. 7, shows the simple manner in which the lath is used to prevent the waste of the mortar.

Government Use of Plastergon Wall Board

In carrying out the gigantic building operation by the Government of constructing sixteen cantonments in various parts of the country to accommodate the immense army that is now being organized, liberal use has been made of wall board in connection with the erection of the buildings. It is utilized to finish the interior of the rooms above the sill of the upper sash, and it is also used on the underside of the rafters with the exception of the kitchen extensions. Immense

(Continued on page 28)

Built for Years of Service — Not Just Made

Years of scientific study and experience in manufacturing high grade planes go into the design of the new Sargent Automatic Set Bench Plane. All parts are carefully machined so that adjustments are easy, and alignments perfect.

See this new plane at your dealers or write to-day for full descriptive catalogue.

SARGENT & COMPANY

53 Water St., New Haven, Conn.



SARGENT

REG. U.S. PAT. OFF.

From the Grindstone Days to the Age of Carborundum



FOR nigh on to forty-five years I have been pushing a plane, and I have often since wished that we had Carborundum Sharpening Stones in the old days. Many a weary trip to the grindstone they would have saved me. ¶ There is nothing like them for quick, clean cutting nothing like Carborundum for keeping your edge tools always in working shape—they don't fill or glaze and they last for years.

Ask your hardware dealer about the round combination Carborundum Bench Stone at \$1.25

THE CARBORUNDUM COMPANY, NIAGARA FALLS, N. Y.



20 years from now

Will the roof you are putting on today still be giving satisfaction in 1936?

Will you be ready then to say: *"This roof has never cost me one cent for repairs!"*

It's worth money to you to know the answer!

Many RU-BER-OID roofs laid previous to 1896 are still giving good service and have never needed repairs.

Genuine RU-BER-OID contains no sand, tar, paper, wood fibre, or any other substance that will crack, run, rot, warp, rust or leak.

Made in Slate Gray, Tile Red and Copper Green. Your dealer will show you samples and quote prices.

THE STANDARD PAINT CO.

588 Woolworth Building, New York
BOSTON CHICAGO

Also makers of Ru-ber-oid Shingles and
Impervite Waterproofing for Concrete

The Paraffine Paint Co., San Francisco, (Under License)
The Standard Paint Co. of Canada, Ltd., Montreal



Pronounced "RU" as in RUBY
RU-BER-OID
ROOFING
COSTS MORE - WEARS LONGER
MADE BY THE STANDARD PAINT COMPANY, NEW YORK, BOSTON, CHICAGO

Look for the "Ru-ber-oid Man" on every roll of genuine Ruberoid

quantities of this material were required and it was supplied by various manufacturers. It is officially stated that at Camp Dix, which is the name of the cantonment at Wrightstown, N. J., 2,500,000 sq. ft. of wall board was required. Among the concerns furnishing material of this kind to the Government was the Plastergon Wall Board Company, 202 Philadelphia Avenue, Buffalo, N. Y., who regard this extensive Government use of wall board as a splendid testimony to its merits. In this connection it may be suggested to carpenters and builders who are not regularly using wall board in their work that there are any number of odd jobs possible with it, such as door panels, kitchen cabinets, table tops, etc. The work which may be done with it is of such a nature that the carpenter can be kept busy during the winter months and in other dull times when his services are not required in the line of regular carpentry construction work.

Sliding Door Hardware

Sliding doors are not only popular and convenient in residence work, but are also being used to decided advantage in connection with churches, schools and public buildings, for they permit a large space to be subdivided as conditions may require. There are three prominent types of sliding partitions: parallel door partitions, accordion door partitions and flush door partitions. Each of these types has its several advantages, all as pointed out by the Richards-Wilcox Mfg. Company, Aurora, Ill., in a booklet entitled "Richards-Wilcox Sliding Door Hardware for Parallel, Accordion and Flush Door Partitions." Each of the types is taken up and illustrated in turn. Halftone illustrations show the appearance of the various kinds of partitions in actual use, while line cuts show the details of construction. The text points out in a lucid manner im-

(Continued on page 30)

Before Deciding On Your Engine—

Look up the question of construction, first cost, quality, power, speed regulation and fuel used. Learn what produces good compression, positive ignition, easy starting, durability and long life. Read about the advantages of vertical valves, high-tension magnetos, kerosene as a fuel, preheating fuel, etc. These subjects and many others vital to the engine user are fully explained by word and illustration in Ed. H. Witte's new (copyrighted) book, **"How to Judge Engines."**

Any subscriber who is interested in an engine for any purpose should read this book. It's the **original "How-to-Judge-an-Engine"** book—written from an experience of over 31 years in the business. Ed. H. Witte is the most successful individual gas engine manufacturer in the U. S. today, owning and operating the largest, exclusive, direct-selling engine factory in the world. You get the inside story of engine making by a practical engine man and **inventor** of engines. He tells you what to do with an engine and **"How to Make Money"** with one.

If you want to know the **"Why"** of high-grade gas engine construction, send your name and address, today, to the Witte Engine Works, Dept. 3190, Kansas City, Mo., or 3190 Empire Bldg., Pittsburgh, Pa.—Adv.



District School No. 75, Evanston, Ill. Raeder & Wood, Chicago, Ill., Architects

Have You the Data

on this approved modern method for saving much of the cost of structural steel and foundations?

Long Span Floor Construction with NATCO · HOLLOW · TILE

In the use of NATCO Hollow Tile, you are offered a sure and safe way to lessen the dead load, the requirements for support in structural steel and foundations and at the same time conserve the maximum strength. Girders or pipes may be concealed in this form of floor construction by a very slight increase in thickness and dead load.

You have opportunity also to provide a floor of unusual sound deadening properties, of quick erection and the very desirable flat ceiling with its scored surface for plastering and better reflection of light.

NATCO's structural strength withstands better than similar types of construction, the knocks and shocks incident to building operations both before and while it is being placed in floor.

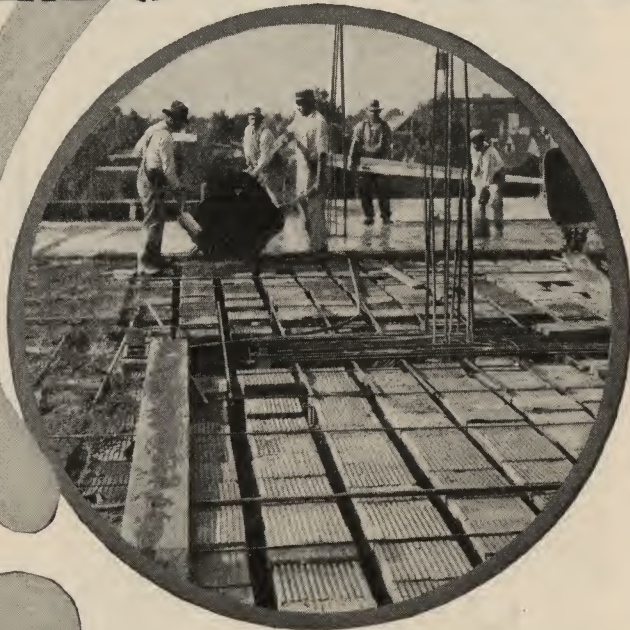
All the data needed with enlightening figures on comparative tests are in our new book, which we will gladly send to any Architect or Engineer upon request. Write today for our Bulletin No. 171.

**NATIONAL FIRE · PROOFING
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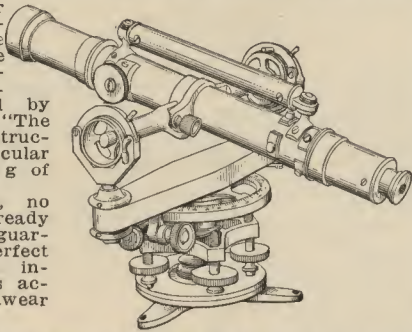
Offices in principal cities and 23 factories in the United States



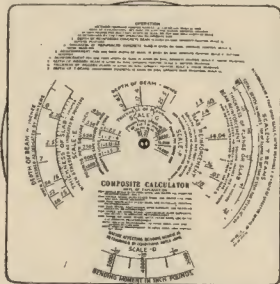
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Improved Convertible Level

The instrument for the critical man—every part is made from the best grade material; each instrument is assembled and tested by expert workmen. "The acme of level construction." Ask for circular "B" and catalog of drawing material. No pins to lose, no screws to tighten, ready in an instant and guaranteed to give perfect satisfaction. This instrument holds its accuracy and will outwear any other.



New York Blue Print Paper Co., 102 Reade St., New York



**SEND A
\$2 BILL
TO-DAY**

For this handy

**COMPOSITE
CALCULATOR**

(Complete with Instructions)

For use in designing reinforced concrete slabs, beams and girders. All computations for concrete are based upon the Joint Committee recommendations, using the Straight Line Formula.

Circular with full particulars.

KOLESCH & CO. 138 FULTON ST.,
NEW YORK

Now Comes a New One— The "WHITE" Convertible Level



For many years "White" levels have been standard equipment for thousands of contractors. For many years these accurate, substantial, easily-used instruments have given unvarying satisfaction. Now comes a new one, the "White" convertible level—more substantial—more durable—more dependable than ever. Unless it meets with your highest hopes and expectations it costs you nothing but the experience. Ask for circular and trial offer.

DAVID WHITE CO., (Inc.)

421 East Water Street
MILWAUKEE, WISCONSIN

No. 2020

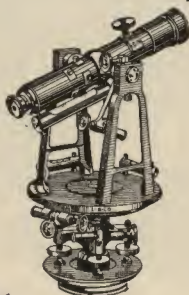
Useful as the Blue Print!

"Couldn't imagine myself without No. 350 BECKMANN."

"The builder has a lot of worries but this little transit settles half of them." "I'd as lief start building minus the Blue Print as get along minus the Beckmann Builder's Transit."

—Opinions of a few users!—Costs \$85.00. Means accurate construction from cellar to roof.

Made by
L. BECKMANN COMPANY
300 Jackson Street
TOLEDO, OHIO



portant constructive features, thus enabling the building contractor to readily refer to the booklet for any mooted point. Each description of the types of sliding partitions is followed by illustrations and prices of the kind of sliding door hardware necessary to best meet the condition created through the using of the particular type of sliding partition. The scope of the booklet is thoroughly practical, and should commend itself to the building contractor who is interested in this class of work.

Selection Sheet of Ambler Asbestos Shingles

A four-page folder which is being sent out by the Keasbey & Mattison Company, Ambler, Pa., carries facsimile reproduction of the colors in which the Century Brand of asbestos shingles are made. These include Newport gray, Indian red and Blue-Black and are also shown cut to shape for the first and second starting courses when laid in accordance with the French or diagonal method, the American method and the Honeycomb method. There are also small sections of roofs showing how these different methods are applied. There is other information in the folder which the builder will appreciate.

The Care of Floors

There has just been issued from the press by the Murphy Varnish Company, Newark, N. J., an attractively printed pamphlet bearing the title "Beautiful Floors and How to Care for Them." The illustrations are numerous and of a rather humorous character, the idea being to show by means of them what happened to a floor. An idea of the primary objects of the pamphlet may be gleaned from the lines which appear under the first illustration showing two men dragging a heavy iron safe over a wooden floor:

"If every floor could tell its tale
Of gross abuse from mankind frail,
We wouldn't have to poetize
To make you quick to Murphyize."

The general text tells how to varnish a new floor, as well as how to clean and care for floors, and there are also presented some interesting comments on quality in varnish and economy in varnishing. In connection with the matter, the merits of the company's products are set forth in a way to appeal to the builder, the house owner and the painter, and in conclusion the pamphlet says: "If you like these sketches and jingles, send them to your friends. They are the plain truth about floors that had been neglected, abused or never properly varnished."

Portable Painting Equipment for Interior Work

Architects and builders all over the country are likely to be interested in a portable equipment for painting the interiors of school, store, office, factory and other buildings, which is said to be a practical elaboration of the already proved and successful Aeron system of painting with air. In fact, excepting the size of the nozzle, the type of Aeron used in applying the coating is said to be the same as that now used by many manufacturers requiring the highest grade finishes for their products. The equipment comprises a portable compressing outfit, consisting of air compressor, gas engine and air receiver with safety valve and pressure gauge, portable paint tank with regulating devices, the Aeron and various lengths of hose for both air and liquid. The compressing outfit is mounted on a hand truck, which can be rolled from place to place either near or in the building, while the paint tank can be placed on the floor of scaffolding and moved

(Continued on page 32)

DEPENDABLE PAINT

WHEN you turn your buildings over to owners after painting them with pure paint mixed from linseed oil, pure Carter White Lead, turpentine and colors their appearance is always beautiful beyond their expectations. That places them in the right mood to accept other details about the building as being done up also in a first-class manner. Your white jobs are noticeably whiter than the usual white paint. Colors made on this very white base come out with surprisingly clear and pleasing tones. Your jobs look distinctively well painted.

Time was when farmers painted only for protection. Now they regard appearances too. Witness the passing of the red barn and the red school house. Now there are more white barns than red ones, and still more that are painted some shade of gray or drab or cream and trimmed with white. This has added wonderfully to the attractiveness of country places and perhaps has had a good deal to do with making farms so much more salable.

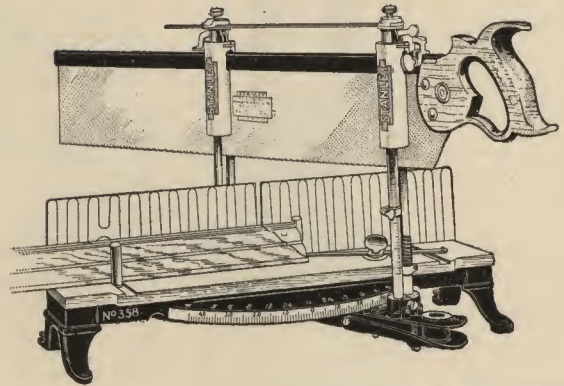
It is equally evident that paint used by the builder ought to be the most serviceable kind to save him annoyance and avoid the detrimental advertising of a paint failure. Cracking and scaling paint is quite like the unwelcome cat that comes back. Just when you are about to close on a nice new job up bobs that paint failure again. You have to explain that the paint was supposed to be first class but was not.

You will never hear anything about Carter Lead jobs except compliments. The advertising it does helps to get many a job and you have no fear of scaling paint. It cannot scale because it is elastic, and so expands and contracts with the wood when the temperature changes.

CARTER WHITE LEAD CO.
West Pullman Station "D"
Chicago, Ill.



Stanley Tools



Stanley Mitre Boxes

STRONG—DURABLE—ACCURATE

A Few Striking Features

- Saw is held above work when not in use.
- Swivel is automatically locked at any angle.
- Two sockets in swivel for use of long or short saw.
- Narrow opening in back of frame, especially adapted for small work.
- Steel rod uprights for saw guides.
- Uprights adjustable for saws of varying thicknesses and for those that run out of true.
- Stock guides for holding work in place.
- Extra wide range of work—will saw at angle of 30 degrees.
- One-piece frame with detachable Malleable iron legs.
- Construction thoroughly mechanical; all parts interchangeable and readily replaced if lost.
- Quickly and easily put together or taken apart for carrying.

A specially made back saw furnished with each box.

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ORIGINATORS OF SASH CHAIN

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BRIDGEPORT, CONN.

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Don't order Wall Ties from your dealer. Order Whalebone Wall Ties and get the best.



Standard size for solid or veneer walls 7 x 7/8, weighing 50 pounds to the thousand.

If your dealer can't furnish "Whalebone," wire us at our expense the following:

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Allegheny Steel Band Co., 886-888 Progress St.
Pittsburgh, Pa.

as the operator may require. This system is being supplied by the DeVilbiss Mfg. Company, 1286 Dorr Street, Toledo, Ohio, and the claim is made that oil paints, first coats and enamels in white and colors, and flat wall paints of all kinds are sprayed to equal advantage on walls and ceilings of wood, brick, concrete or other materials. One coat applied by this method is said to be usually sufficient to cover rough brick and concrete walls uniformly, where brushes are almost useless and wear out quickly. Reference is made to the cleanliness of the work and the saving of material by the use of this spray system. The speed of covering is said to be five times faster than brushing and the loss of time in dipping into and refilling the pail is eliminated through the use of the portable tank, which holds 7 gal. of paint. It is also stated that from 500 to 1000 sq. ft. of surface can be covered per hour, the class of work and paint used being the governing factors. A circular which the company has issued illustrates and describes this system and shows the apparatus required for doing the work. A copy of the folder can be obtained by any reader of the paper by making application to the address given above.

Some Reasons Why Builders Should Use "Econo" Expanded Metal Lath

In a late issue of "Expanded Metal Construction," published monthly by the North Western Expanded Metal Company, 509 Old Colony Building, Chicago, Ill., was a typewritten leaflet headed with the question, "Do you find it difficult to get reinforcing steel?" As an answer to this it is stated on the leaflet that "Econo" expanded metal can be obtained quickly from the company's factory at Chicago, but there are other reasons, the company states, for using this material on every job of reinforced concrete. These reasons are then enumerated, among them being that "Econo" saves time, can be placed quickly without tying or spacing and saves labor, as any unskilled laborer can place enough reinforcement in half an hour to keep the concrete gang busy for half a day. The numbers, sizes, weights, etc., are given on the leaflet so that the builder receiving a copy of it will have before him all necessary information.

The Advantages of Surfacing Floors

A circular in which the endeavor has been made to impress upon contractors and builders the advantages of surfacing floors by machinery instead of following the old method of hand scraping has just been issued from the press by the American Floor Surfacing Machine Company, 521 South St. Claire Street, Toledo, Ohio. Attention is called to the scarcity and high cost of labor at the present time and there is presented a comparison of the cost of surfacing floors, the new and old way. The circular also gives a description of the "American Universal" floor surfacing machine, which is operated by an electric motor, and the matter is presented in a way to strongly appeal to the enterprising carpenter and builder. There are also several letters from contractors, who point out the great saving which has been accomplished in the amount of labor expended in doing work of this kind. We understand that a copy of this circular may be obtained by any reader who will make application for it.

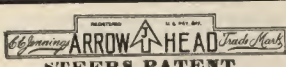
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for Free
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TRADE MARK REGISTERED

Quick drying and non-penetrating like Shellac. Glossy, smooth and tough as Lacquer. Less expensive and more durable than Varnish. Takes the place of all three. Dries in three hours. A fresh coat can be applied and sand papered each day. DEGRAH also comes as a white enamel—also as an Enamel Varnish. To the latter you merely add zinc in oil to make your own white enamel. DEGRAH White Enamel saves you big money on contracting work. KEYSTONE VARNISH CO., 2013 Keystone Bldg., Brooklyn, N. Y.

C. E. Jennings  **Expansive Bit**
STEERS PATENT

NOTE CURVE ON CUTTER;
PREVENTS HOGGING-IN.

NOTE CLEARANCE ON FACE OF BIT; PREVENTS DULLING OF CUTTER.

NOTE STRENGTH OF CAP.

NOTE MICROMETER SCREW ADJUSTMENT.

SEE THOSE TEETH: CUTTER CANNOT CREEP!

NOTE BEVELS ON CAP AND CUTTER AND
7/8" BEARING OF CAP ON CUTTER;
CUTTER CANNOT SLIP!

NOTE TWO BEVELS ON SPUR, TO PREVENT CUTTER BREAKING.

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Works well on any pitch roof. Gloves or mittens can be worn and nails driven faster than by the old way. This "Hand Nailer" is the only nailer. Throw nails in by the handful and start nailing, etc. Nails can be driven through tin or quite heavy sheet iron.

PAYS ITS COST ON ONE JOB

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For use in all classes of new work
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 Greenfield, Mass.

Something For You

in our Pamphlet 29; viz.:

Valuable Tables for finding size of joist, safe load of joist, actual load on hanger, etc., etc.

Some of these Tables are not in print elsewhere.

The Pamphlet and the Mounted Model Hanger will be mailed on request.

SOMETHING FOR US. We ask your special attention to items 5, 6, 7 on page 5 of the Pamphlet and to the matter on pages 23 and 24 relating thereto.

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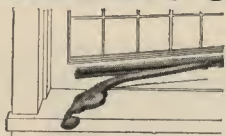
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For both right-hand and left-hand casements. Can be opened as much or as little as desired, so that air can be admitted without also admitting rain or snow. Locks automatically, works easily. Gives a house a very distinctive appearance. Strong, durable, moderate price.

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UPSON-BOARD

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Contains no dirty, black materials, or cheap, punky "jack-pine" fibers. Write for full information.

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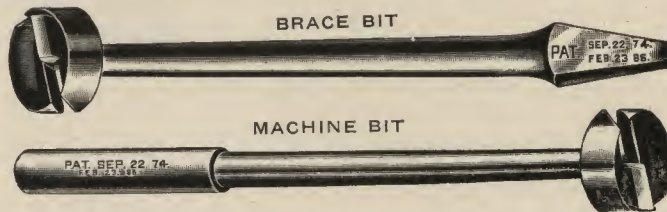
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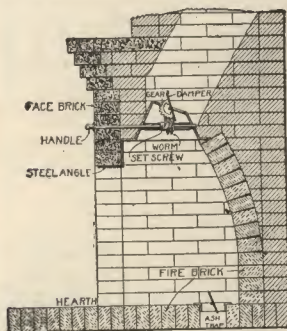
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Requires no furring due to the V-SHAPED CORRUGATIONS imbedded at intervals of 7 inches.

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It will not rust as it is heavily galvanized with the finest grade of Western Spelter, is much easier to handle and conforms to irregular curves much easier than any other form of metal or wood lath. Ceilings plastered on this lathing will never crack or drop off. Just the article for stucco work. Write for booklet 61-F.

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WE SEND DERRICKS ON TRIAL TO RELIABLE CONTRACTORS

Our Motto is SATISFACTION or DERRICK RETURNED

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Fasten automatically. No nails. No screws. Just bore 4 holes.

The automatic saw tooth fastening feature and the easily made mortise will save in labor the cost of the pulleys.

Frictionless, Noiseless, Everlasting.

Write for free samples.

Grand Rapids Hardware Co.
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No. 10 Ball Bearings

Roofed With Winthrop Tapered Asphalt Shingles

The Only Kind Tapered Like Wood

R. G. Castleman, 120 West 46th St., Bayonne, N. J., writes: "I am enclosing a small picture of our house, which is claimed to have the finest appearing roof in the vicinity. We used red Winthrop Tapered Shingles on the roof and gray on the sides. The house was built in 1915 and there is not a sign of wear on the roof." Contractor Agents wanted. Write for sample shingle.

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NIAGARA GALVANIZED WALL AND VENEER TIES

For strengthening and stiffening brick walls

For attaching brick to frame in brick veneered buildings
Good Metal Ties are the Stiff Backbone of any Wall
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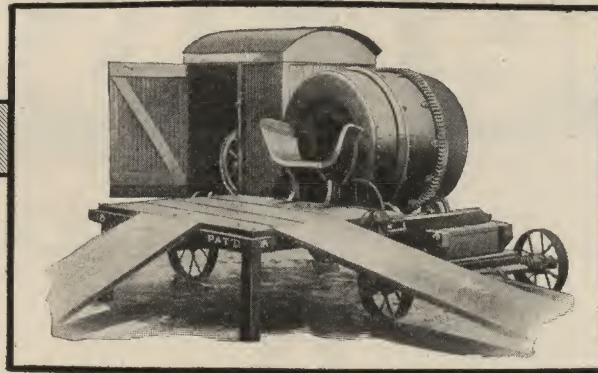
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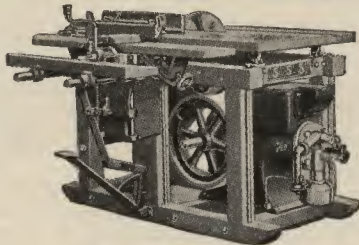
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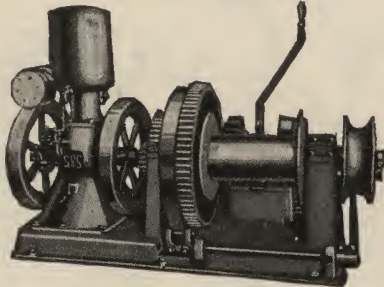


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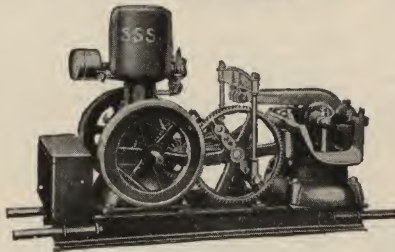
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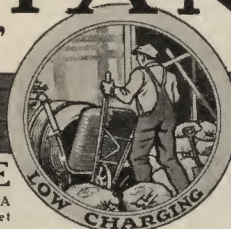
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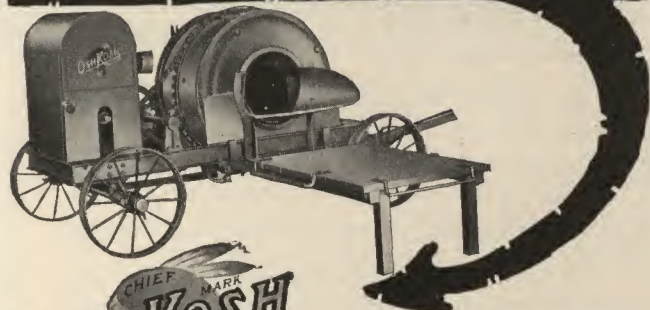
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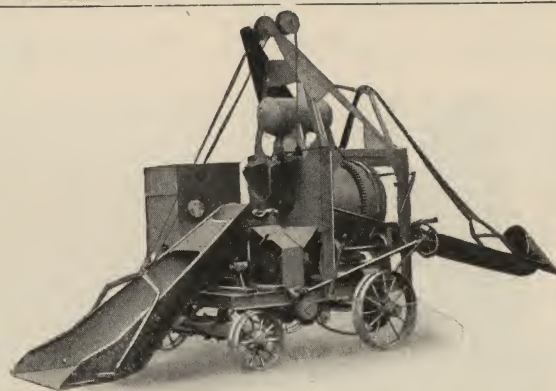
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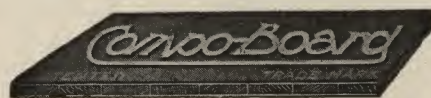
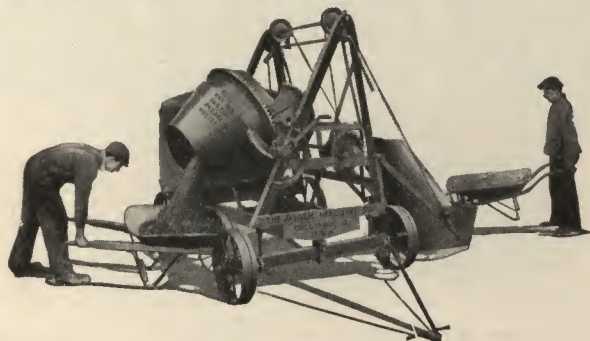
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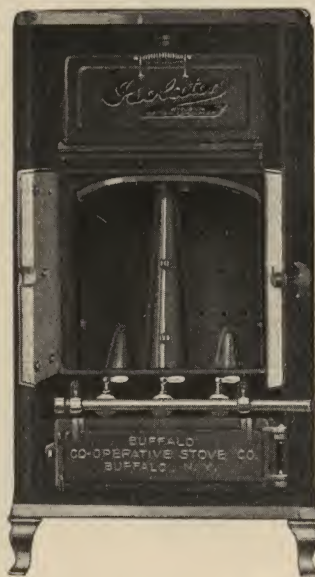
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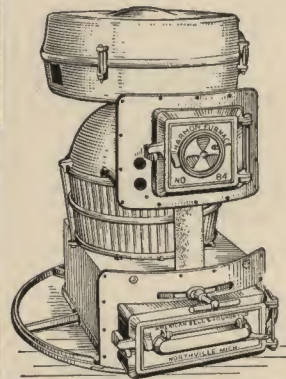
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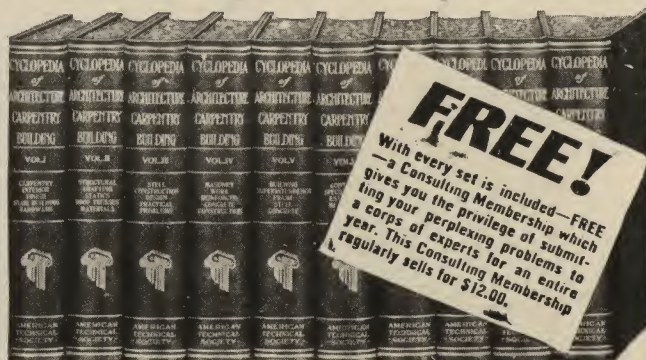
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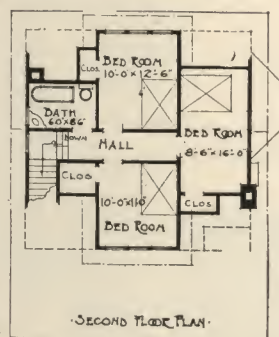
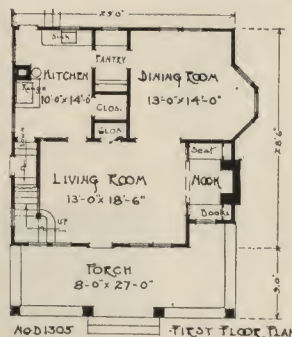
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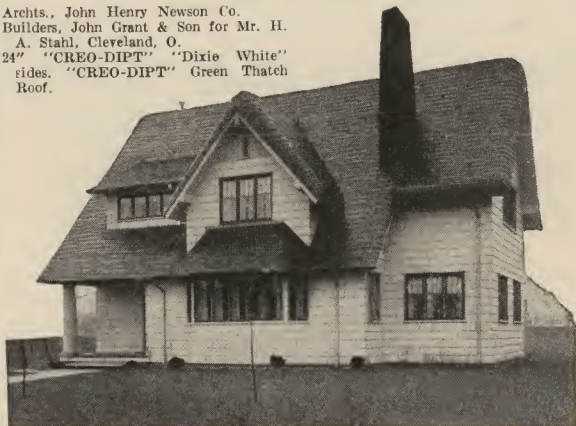
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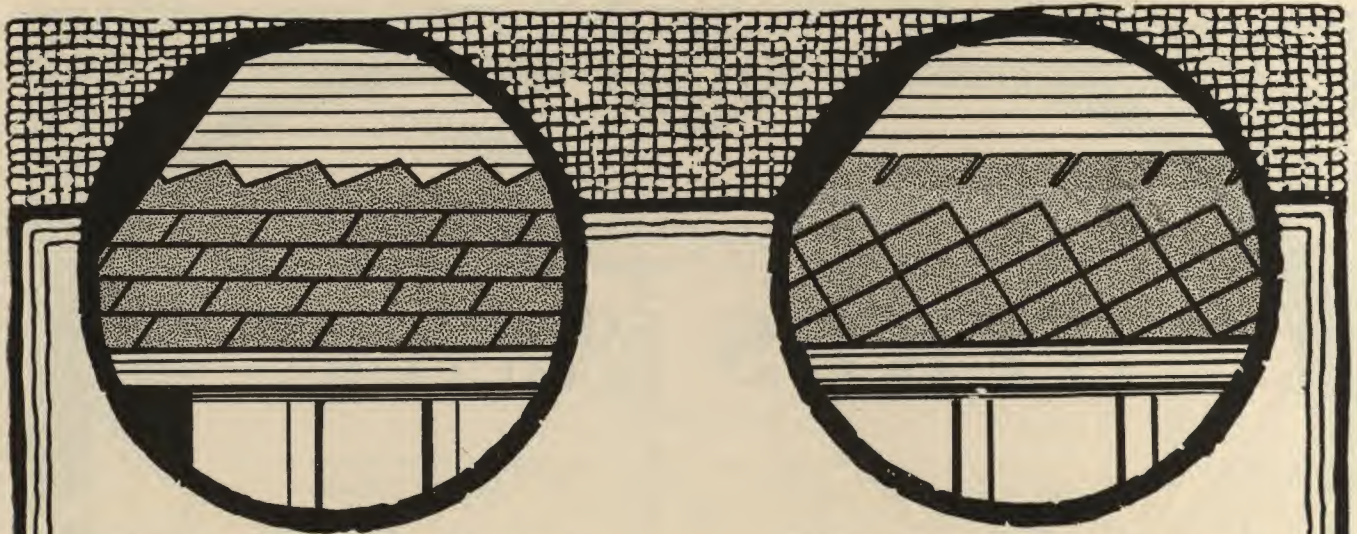
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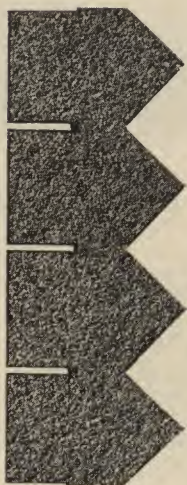
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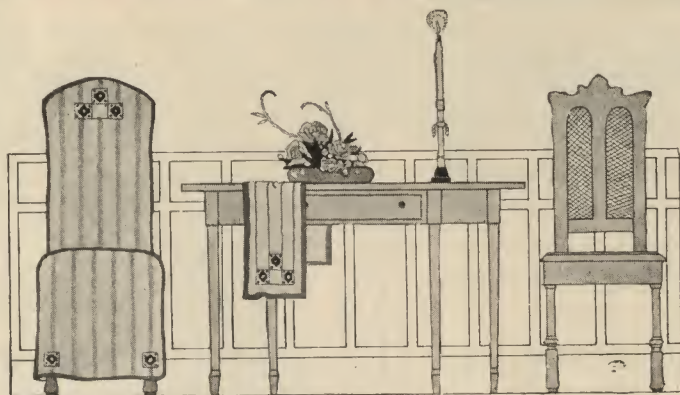
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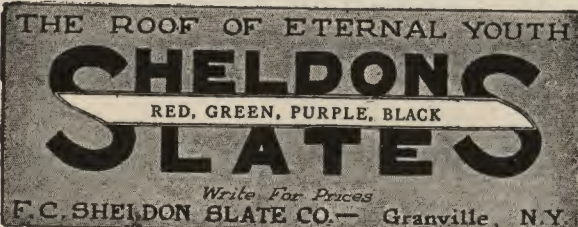
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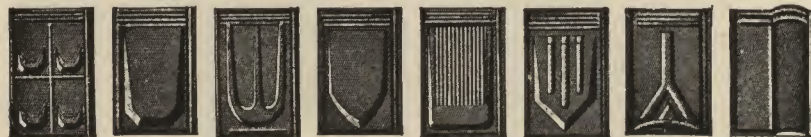
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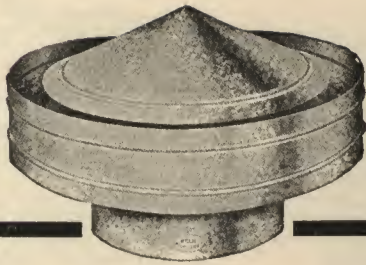
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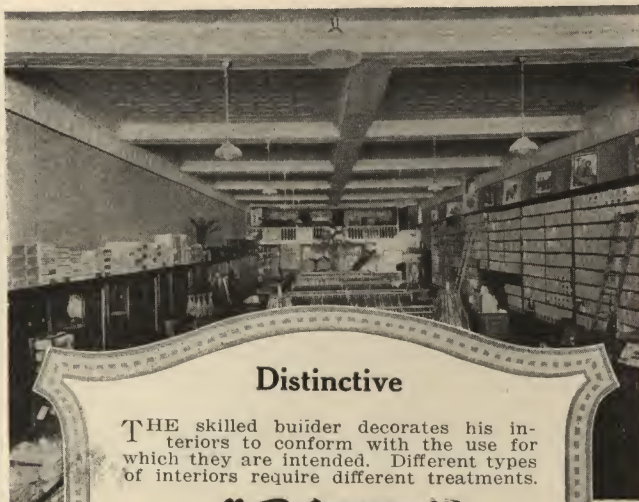
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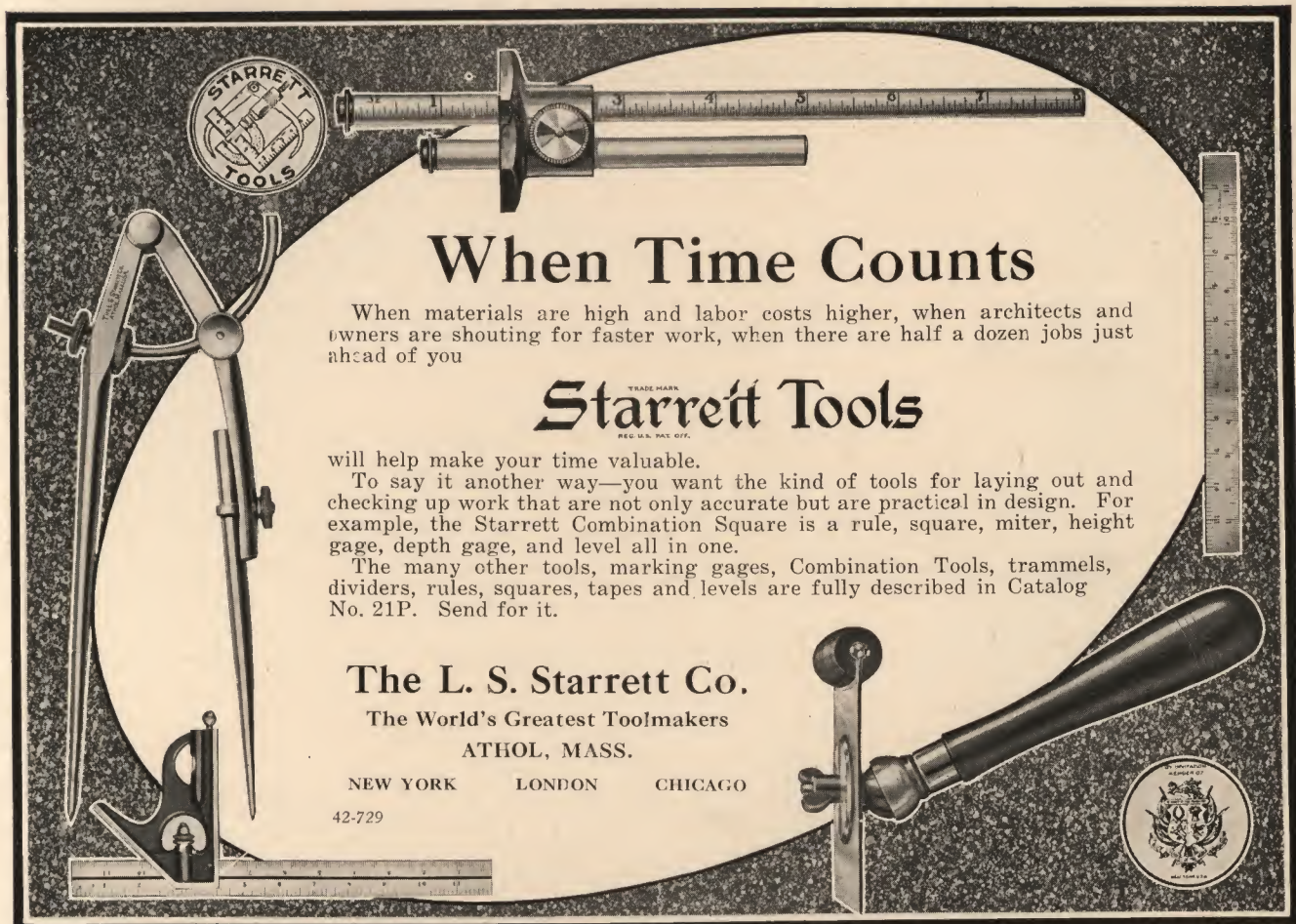
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